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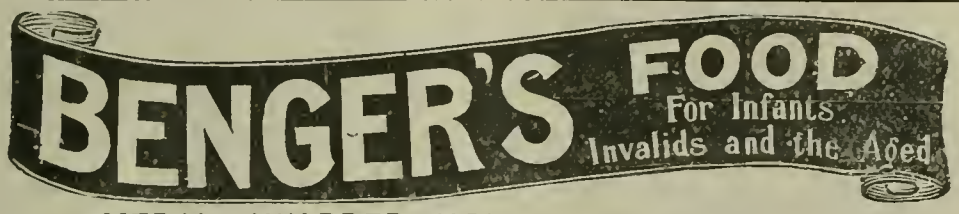

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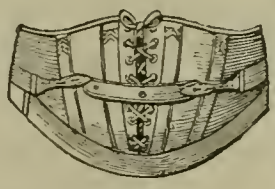

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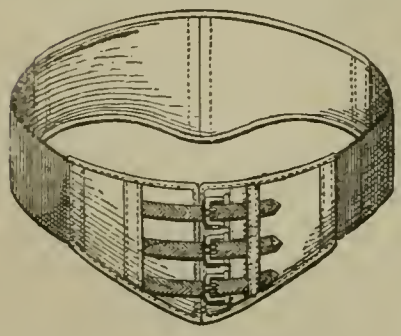

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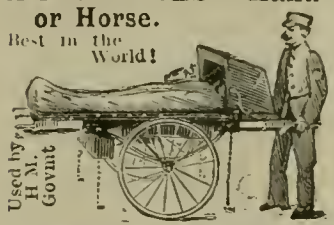

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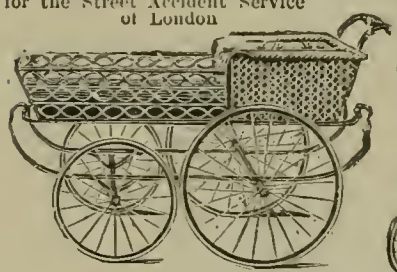

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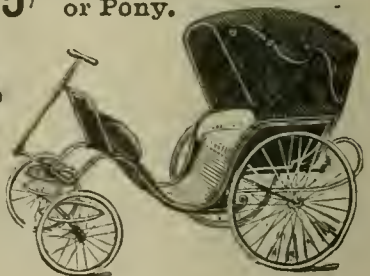

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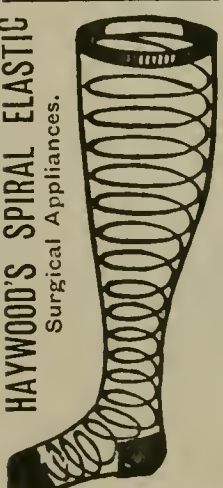

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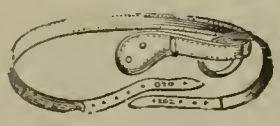

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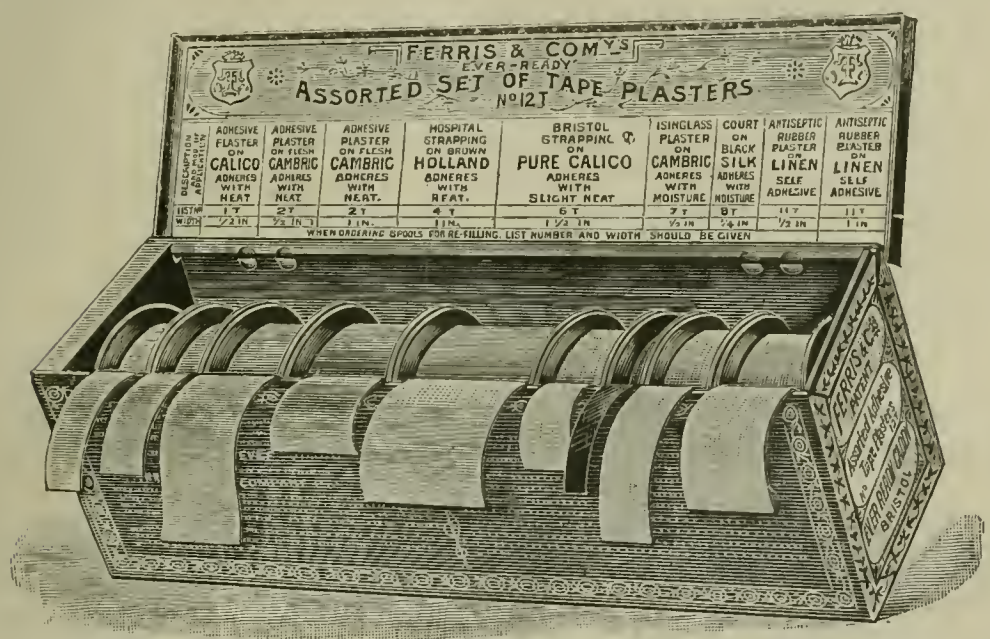
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CONTENTS.

THE MONTH :— PAGE

Consulting Surgeons for the Field Force 601
Consulting Physicians for the Army in South Africa 604
The Rejuvenescence of the Pathological Society 605
The Jenner Institute 606
The "Archives of Neurology" 607
Medical Ethics at Carlisle 608
A Congress on Tuberculosis in London 610
The Practitioner 610

ORIGINAL COMMUNICATIONS :—

A Clinical Lecture on the Operative Treatment of Fibroids. By G. E. Herman, M.B., F.R.C.P., F.R.C.S. 611
Incompatibility and some of its Lessons. By Walter G. Smith, M.D. (*continued*) 621
Mongolian Imbecility in Infants. By G. A. Sutherland, M.D. Edin., M.R.C.P. Lond. (*Illustrated*) 632
On Temporo-Maxillary Ankylosis and its Relief by Excision of the Neck and Condyle of the Lower Jaw. By David M. Greig, C.M., F.R.C.S. Edin. (*Illustrated*) 642
The Relationship of Membranous Inflammation of the Nose to Diphtheria. By Eugene S. Yonge, M.D. 652
A Post-Graduate Lecture on Affections of the Cornea. By Marcus Gunn, M.B., F.R.C.S. 658

A MEDICO-LITERARY CAUSERIE :—

Montaigne on Medicine and Medicines 669

PUBLIC HEALTH 677

(*Continued on page* xviii.)

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To face Contents.]

CONTENTS (*continued*).

A REVIEW OF THE MEDICAL SCIENCES:— PAGE

MIDWIFERY. By W. E. FOTHERGILL, M.A., B.Sc., M.D. (*Illustrated*) . . 682
SURGICAL DISEASES OF CHILDREN. By RAYMOND JOHNSON, B.S., F.R.C.S. (*Illustrated*) 691
ODONTOLOGY. By ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S. . . . 697

REVIEWS OF BOOKS:

INTESTINAL OBSTRUCTION: ITS VARIETIES, WITH THEIR PATHOLOGY, DIAGNOSIS, AND TREATMENT. By FREDERICK TREVES, F.R.C.S. (*Illustrated*) . . 703
THE DISEASES OF THE STOMACH. By WILLIAM W. VAN VALZAH, M.D., AND J. DOUGLAS NISBET, M.D. 706
AIDS TO THE TREATMENT OF DISEASES OF CHILDREN. By JOHN MCCAW, M.D. . 707
ATLAS OF LEGAL MEDICINE. By DR. E. VON HOFFMANN 707
THE RETROSPECT OF MEDICINE. EDITED BY JAMES BRAITHWAITE, M.D. LOND., AND E. F. TREVELYAN, M.D. LOND. 707
A CLINICAL TEXT-BOOK OF MEDICAL DIAGNOSIS, FOR PHYSICIANS AND STUDENTS. By OSWALD VIERORDT, M.D. 708
HANDBOOK OF MEDICAL GYMNASTICS. By ANDERS WIDE, M.D. (*Illustrated*) . 708
MASSAGE AND THE ORIGINAL SWEDISH MOVEMENTS: THEIR APPLICATION TO VARIOUS DISEASES OF THE BODY. By KURRE W. OSTRÖM 711
B. BRADSHAW'S DICTIONARY OF BATHING PLACES, CLIMATIC HEALTH RESORTS, ETC. 711

LITERARY GOSSIP 713
NOVELTIES AND NEW INVENTIONS 714
PRACTICAL NOTES 716
A MEDICAL CALENDAR 720

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THE PRACTITIONER.

DECEMBER, 1899.

The Month.

"Quidquid agunt homines."

Consulting Surgeons for the Field Force.

The appointment of consulting surgeons for the forces now in South Africa is the direct outcome of Professor Ogston's address at the annual meeting of the British Medical Association at Portsmouth, about which something has already been said in The Practitioner. The facts to which he called attention were perfectly well known in the profession, but no one had the courage to speak out till he dared to "bell the cat." It may not be superfluous to insist once more on the fact that Professor Ogston's criticisms were not directed against the army medical officers themselves, but against the foolish system which denies them nearly all opportunities of perfecting their skill, and keeping their knowledge abreast of the advance of science. If the more eager spirits seek for such opportunities, their efforts are paralysed by the pressure of red tape. As Professor Ogston says:—

> "Under the existing system no junior officer of the Royal Army Medical Corps has any opportunity of practising modern surgery, even if occasion offer; he is tied down by restrictions and impediments enforced by his seniors, and his natural desire to prepare himself for the highest work is disregarded and repressed."

A typical example of the "restrictions and impediments" which official routine places in the way of aspiring military surgeons was given in The Practitioner for September. The story need not be retold here; it is enough to say that an invitation to officers of the Army Medical Corps at an Indian station, where there was a great abundance of eye cases, to take a share in the operative practice thus afforded, was declined by the superior authorities on the ground that all medical officers on probation had to go through a course of operations on the

eye at Netley! If this kind of thing is done in the green wood of medical administration, what may be expected to happen in the dry logs of military officialdom? Is it any wonder that the War Office fails to see any reason why study leave should be granted to medical officers? Well may Professor Ogston say of the existing conditions of service:—

"They afford to the Army and Navy surgeon, it is no exaggeration to say, scarcely any chance of acquiring the knowledge and skill that would be demanded of him in war."

Such being the case, it is natural that when the long lists of wounded began to come in from South Africa, people of influence with friends and brothers in the fray brought pressure on the War Office to secure the highest surgical skill available for those exposed to the deadly markmanship of the Boers.

The nation is to be congratulated on the fact that men of such eminence as Sir William MacCormac, Mr. Treves, and Mr. Makins should be ready to obey the call of patriotic duty. Sir William MacCormac might well have considered himself exempt from service: he can no longer set down his name in the scroll of youth, and it is not long since he passed through a long and enfeebling illness. His self-sacrifice in the circumstances may justly be called heroic. His official position and his special experience in the surgery of war will make his counsel and help acceptable to the Royal Army Medical Corps, while the celebrity of his name will inspire confidence in the public.

Of Mr. Treves nothing need be said here but that his mere presence will be an encouragement to the wounded, and a source of hope to their friends. He will be welcomed by the troops as Ambroise Paré was by the French soldiers besieged in Metz. "They received me," says the Father of French surgery, "with great joy, and did me the honour to embrace me and tell me I was welcome; adding they would no more be afraid of dying if they should happen to be wounded."

This new plan of sending out first-rate men to the seat of war to help the officers of the Army Medical Corps is likely to

be fruitful of good results—if it be adequately carried out. But what are three among so many? At least half a dozen more of equal rank should be invited to go if this murderous war lasts several months. No friction need be feared between the consulting surgeons and the medical officers, if men be chosen who are recognised as teachers of the profession.

I am inclined to doubt, however, whether the suggestion made by a writer in the *Times*, that "even in times of peace a deliberate governmental coalition should be made between the heads of the Army Medical Department and eminent civilian surgeons," is likely to be of any practical use. It is by no means clear what is meant by a "deliberate governmental coalition," and no hint is vouchsafed as to how it is to be brought about. We are merely invited to "inquire how these things are done in Germany." Had the writer himself taken the trouble to do this, he would have learnt that in this matter the example of Germany does not apply to this country. In the Fatherland, surgeons of eminence are attached to the army not by deliberate governmental coalition, but by the obligation of compulsory military service. Langenbeck was a surgeon-general *à la suite*, as I believe Bergmann is now; and a university professor is liable to be called upon to go to the front as a staff-surgeon, just as Bismarck had to take the field as a major of cuirassiers. Are British surgeons prepared—just, it may be, when the tide which is to lead them on to fortune is at the flood—to be "commandeered" for service at the other side of the globe? That is what a "deliberate governmental coalition" means, if it means anything.

The Government may always rely on the patriotic devotion of the profession at any time of national need. Indeed, leaving patriotism and philanthropy out of the question, there never will be any lack of men who will volunteer to go wherever stricken fields offer opportunities for the exercise of their skill. But there really ought not to be any occasion to go outside the Army Medical Service. Some of the best operators in the history of surgery have been in the army, and have acquired their skill on the battlefield. One need only mention the names of John Hunter, Larrey, Guthrie, and Longmore. As far as the

Royal Army Medical Corps is concerned, the great lesson to be learnt by the military authorities from the present war is the necessity of granting medical officers a sufficient amount of study leave to enable them to keep their professional knowledge up to the highest standard. Further, men who show special aptitude for surgery should have every opportunity of cultivating it, and should be encouraged to do so. Had these things been done in the past, the country would not now have several thousands of pounds added to the cost of a war which is sure to be a grievous burden to the taxpayer.

* * * * *

Consulting Physicians for the Army in South Africa.

The Boer bullets are not the only, nor perhaps the worst, danger that our poor fellows will have to encounter in the Transvaal. Very soon they will feel the fiery breath of the African summer, and dysentery and typhoid will attack them. A still deadlier disease may come: indeed, it is already casting its shadow before, for cases of plague are reported at Delagoa Bay. A heavy responsibility will rest on the authorities if the mobilisation of these invisible enemies is not prevented. The medical officers of the Army are thoroughly efficient in every detail of what may be called sanitary tactics, and they may be trusted to do their work as well as it can be done amid the alarums and excursions of war. Too many commanding officers, however, share the opinion of the Commander-in-Chief that sanitation is a "fad." Principal medical officers also have their idiosyncrasies, and what is more, they have the power of making their idiosyncrasies respected — in an official sense at least — by their subordinates. Thus, some years ago the official doctrine was that typhoid fever did not exist in India; its name was tabooed and its appearance in "returns" was treated as a breach of discipline. This was, I believe, due to nothing worse than the adoption of an erroneous theory in high places. In Egypt, however, and also, I believe, in the Soudan, the prevalence of typhoid among the troops was hushed up by order, the cases being returned as simple continued fever. In these campaigns more than once the strongest remonstrances of medical officers against insanitary abominations that could easily have been prevented were met by the military authorities either with stolid indifference or with a blank *Non possumus*.

For the protection of the forces in South Africa against the dangers that may arise from official ignorance or apathy, the Government would be well advised if they appointed one or two consulting physicians to the forces, who should hold the same relation to the Royal Army Medical Corps as the consulting surgeons who have been sent out. These Sanitary Commissioners, in addition to their special knowledge, would be, in a disciplinary sense, independent of the military authorities, and could, therefore, offer advice not merely "when it is wanted," as Lord Wolseley graciously allows, but when it is not wanted; and they could also insist at least on its receiving serious attention. The services in such a capacity of a man of independent position combining medical knowledge with official experience in sanitary administration would be invaluable. His presence with the army would be at once a support to the medical officers and a check on commanders who may think the care of the health of their soldiers a "fad."

In the light of past experience, we cannot afford to neglect anything that may help to protect our fighting men against disease, and if our forces in Africa are decimated by typhoid or dysentery, the public will surely want to know if everything possible has been done to prevent them, and the Government will not find it easy to justify its failure to adopt the precaution that has been indicated.

* * * * *

The Rejuvenescence of the Pathological Society.

THE Pathological Society certainly deserves to be congratulated on the burst of enterprise with which it has marked the beginning of its fifty-first session. The Society rather prides itself on its motto *Nec silet mors*. But the motto was beginning to lose its aptness, for it is, I believe, admitted that for some time past death has been, if not altogether silent, decidedly sparing of speech to the Society. The idea of laboratory meetings is an excellent one, and the first of these, held a week or two ago at the Jenner Institute, gave a brilliant start to the "new departure," which is rich in promise for the future development of pathology in this country.

It is not, however, quite clear why these laboratory meetings

are to be shrouded from the public gaze like the mysteries of Eleusis. The publicity given by the medical journals is the breath of life to most societies, and members are eager even for such nebulous immortality as is given by the mere mention of the fact that "Dr. So-and-so made some remarks." I am not surprised, therefore, to see that the proceedings of the first of these "informal" meetings have been published in considerable detail in the two big medical "weeklies," and I venture to predict that future meetings will be not less fully reported. There is a good deal of human nature even in pathologists, and it is tolerably certain that some notice of the work reported or displayed on these occasions will find its way to the outer world, unless the worker has some reason stronger than mere modesty for wishing his intellectual flowers to blush unseen.

* * * * *

The Jenner Institute.

The Pathological Society could have found no better place for beginning the process of its rejuvenescence than the Jenner Institute. This splendid foundation is the embodiment of the spirit of scientific research, and is the best hope of future progress in our knowledge of the causes of disease and in the discovery of means of prevention and cure. The Second Series of the *Transactions* of the Institute recently published contains a most interesting Introduction, in which a full account is given, with illustrations, of laboratories and research-rooms, and of the complete equipment for work on the most advanced lines now to be found in the building at Chelsea. Lord Iveagh has certainly earned a title to the undying gratitude of mankind by the princely munificence which he has shown in endowing this noble Temple of Pathology. The Institute is, of course, only on the threshold of its career, but already the work done there is of very high value, as the two volumes of *Transactions* which have appeared are sufficient to show, and there is every reason to anticipate that the output of new knowledge will increase year by year. [Abstracts of the papers in the New Series of *Transactions* will appear in the proper place; they are of so technical a character that it would hardly be fitting to refer to them in detail here, and if it were otherwise the fear of compromising my editorial infallibility would deter me from making the attempt. I may note, however, that diphtheria bulks large

among the subjects treated. Professor Ehrlich contributes a paper on the constitution of the diphtheria toxin, which is also dealt with by Dr. W. Bulloch. Dr. R. T. Hewlett discusses Neisser's diagnostic stain for the diphtheria bacillus, and Dr. A. Salter treats of the pathogenicity of the pseudo-diphtheria bacillus and its relation to the Klebs-Löffler organism. Among the laboratory notes there is one on the early diagnosis of diphtheria and a table showing the age incidence of the disease.

Mr. G. Dean describes a new pathogenic streptothrix; Mr. Arnold Lawson shows that the normal conjunctival sac is antiseptic: Dr. Allan MacFadyen, the director of the Institute, writes on symbiotic fermentation, and Mr. Sydney Rowland on the structure of bacteria. The other papers are not less valuable in themselves, but are of less direct interest to the medical practitioner. The material for the volume has evidently been selected with the greatest care and judgment, and it is hardly an exaggeration to say that the volume does not contain a single page in which there is not some important addition to the sum of our knowledge.

* * * * *

The "Archives of Neurology."

ANOTHER volume which has recently appeared gives abundant evidence of work in the domain of research that should go far to redeem the name of this country from the discredit which has not altogether unjustly attached to it for its neglect of scientific pathology. This is the *Archives of Neurology*, of which Dr. Mott, the Pathologist to the Asylums of the London County Council, is the editor and the principal author. The work, it is understood, was born into the world with considerable difficulty, and after a protracted labour it narrowly escaped death from strangulation with the cord of red tape in the very moment of delivery. The London County Council had shown such enlightenment in the establishment of a laboratory at Claybury for the study of the pathology of insanity, that it is disappointing to find that they have apparently a very inadequate appreciation of the value of the work which it is one of their best services to the public to have instituted. It is to be hoped that no paltry economy or Philistine indifference to science

will in future stand in the way of a publication which, it is not too much to say, is destined to be among the glories of British science.

Of the contents of the *Archives* but little need be said here. Dr. W. J. Collins contributes an introduction, giving an account of the foundation and equipment of the laboratory and a general survey of the work done, and its most directly important results are summed up by him as follows:—"It is to General Paralysis that the greatest amount of attention has, in the past year, been directed. The potent influence of syphilis is abundantly brought out, though it remains doubtful whether this is excited by way of infection or as an added influence to that excess *in Baccho et Venere* which determines neurasthenia. It also appears that general paralysis must take its place with other organic degenerations of the nervous system, differing from such as tabes and others rather in the area of distribution of the degeneration than in its essential nature."

I think all concerned are to be heartily congratulated on the production of these *Archives*, and the first fruits of the work done by Dr. Mot and his assistants at Claybury which they contain give promise of a splendid harvest if their labours are not hampered by the obscurantism of a few narrow-minded Bumbles.

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Medical Ethics at Carlisle.

I HAVE received the following letter from Mr. T. Garrett Hodder, of Cardiff:—

"I admire your smartness and ability, but I cannot give you credit for fairness. In your notes you refer to the meeting of the Ethical Section of the British Medical Association as a *discreditable fiasco*. That matters of a personal nature were unfortunately allowed by the President to be introduced in one particular instance I am quite willing to admit; but that the whole proceedings should be designated as you have thought proper to do, is not only unfair but is not truthful.

"I may remind you of the exceedingly valuable contributions of Mr. Victor Horsley and Mr. C. S. Loch as good evidence of my contention."

* * * * *

Mr. Garrett Horder is scarcely a model of a polite letter-writer, but then he is a reformer, and from your medical reformer, "courtesy (to quote De Quincey) flows as naturally as milk from a male tiger." I do not deny that a few valuable

papers were read in the Ethical Section, but of the work of the Section as a whole I can only reiterate my opinion that it was a discreditable *fiasco*. What is a *fiasco?* In the language of the vulgar it is a "fizzle," a feeble splutter ending in nothing. There was sound and fury enough at the meetings of the Ethical Section, but all signifying nothing. Mr. Garrett Horder in a later epistle invites me to "turn up the reports of the Carlisle meeting," when, he thinks, I shall agree with his contention that good and valuable work was done in the Ethical Section. Now I believe it is a fact that a considerable part of these reports was suppressed from a feeling that the proceedings were so discreditable that the publication of them would tend to bring the profession into contempt. But in what was allowed to appear there was enough to show the *ethos* of most of the self-constituted authorities on medical ethics, and the revelation was so discouraging that the British Medical Association has with a proper regard for the dignity of the profession declined to supply a platform for a further exhibition of the same kind. If this is not a "truthful" account of the matter, will Mr. Garrett Horder kindly explain how the Ethical Section came to be regarded as among the things that never would be missed?

In a later epistle Mr. Garrett Horder says that, as one who has devoted some little time and attention to questions of this kind, he cannot help feeling that the leading consultants of this country "have not hitherto taken that part in the settlement of vexatious things which one might have been led to expect." I cannot speak in the name of the leading consultants, but as a humble individual I may perhaps be allowed to suggest that the consultant is so often told by our reforming friends that he cannot know anything of the needs of the general practitioners that he thinks it best to leave them to settle their affairs without obtruding his help. And as Mr. Garrett Horder appears to like plain language, I may add, that the real difficulty in the settlement of the affairs of the general practitioner is that the best men of the class persist in holding themselves aloof from medical politics, leaving the field to a few fussy agitators, who neither by professional position, nor by personal distinction are entitled to take the lead. All the more honour to

consultants like Mr. Horsley, who chivalrously strive to remedy evils which do not affect themselves. I fear, however, they have undertaken a thankless task, and they must sometimes, like Falstaff, be ashamed of their soldiers.

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A Congress on Tuberculosis in London.

THE fact that the Prince of Wales has graciously consented to be the President of the Congress on Tuberculosis in 1901 is in itself an assurance of its success. A preliminary meeting will be held in London in December to consider the plan of organisation of the Congress; delegates from the branches of the National Association for the Prevention of Consumption and other Forms of Tuberculosis, and from other societies, with a large number of influential and distinguished persons, are expected to be present. Meanwhile the Association is continuing its work quietly, and perhaps slowly, but surely. It has established a journal entitled *Tuberculosis*, which is intended to collect all information as to the disease and as to the steps taken throughout the world for its prevention, and also to serve as an active force in our propaganda. The first number which has just appeared has met with a favourable reception.

* * * * *

The Practitioner.

THE date on this number reminds me that THE PRACTITIONER has now completed the fifth year of its new avatar. I may, perhaps, be forgiven for feeling now some gratification in the remembrance of the Cassandra-like predictions with which a good many people received the announcement of its birth. I confess I myself had some doubts of the viability of the infant, but these were soon removed. The journal may now be regarded as having survived the most dangerous period of childhood, and entered on vigorous adolescence. I have the comforting belief that it now has a large and constantly growing circle of friends who are interested in its development. May I hint that in their hands as much as in mine lies the hope of THE PRACTITIONER reaching a prosperous maturity?

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Original Communications.

A CLINICAL LECTURE ON THE OPERATIVE TREATMENT OF FIBROIDS.*

By G. E. HERMAN, M.B., F.R.C.P., F.R.C.S.,

Senior Obstetric Physician and Lecturer on Midwifery at the London Hospital.

GENTLEMEN,—I lecture to-day on the operative treatment of fibroids. There is no necessity to operate for a fibroid merely because the fibroid exists. We have no knowledge of the laws which regulate the growth of fibroids, but we know that the great majority of them reach a certain size and then stop growing. We know not on what this stoppage of growth depends. The existence of a fibroid is not sufficient cause for removing it.

The reasons that call for operative interference are, first, hæmorrhage, such as, if not restrained, is enough to weaken the patient. Many fibroids cause only slight hæmorrhage, and that hæmorrhage can be brought within limits compatible with health by the use of ergot. When this is the case no operative treatment is called for. Again, fibroids may call for operation on account of their size—fibroids sometimes become the largest tumours which are found in the body—they may be so large as to make the patient unwieldy, and even bedridden, without causing any symptoms beyond those due to their bulk. We had a patient in the hospital three years ago who had been bedridden for years with an enormous fibroid. After the fibroid had been removed, the patient was able to lead an active life. Its size may thus be a sufficient reason for removing a fibroid. Then, a fibroid may be relatively large in relation to the space in which it lies. A small fibroid in the pelvis may press upon the urinary organs, or upon the bowel or nerves, and cause symptoms. This may be a sufficient reason for performing an operation. Further, when

* Delivered at the London Hospital.

a fibroid rapidly increases in size, this may indicate that the tumour is degenerating or is a sarcoma rather than a fibroid. Those are the chief reasons for operative measures.

I notice in different books and papers a tendency to regard one particular operation as applicable to every fibroid. Operations are compared, and people say this or that or the other is the best. There are many operations which can be done for uterine fibroids, and each has its own sphere. There is no such thing as an operation which is the best for every fibroid.

The first operation I shall speak of is that which is the best if it can be done, namely, the removal of the fibroid. If you can remove it without taking away anything else, that is the best possible treatment. There are cases in which removal of the fibroid is simple and no one would dream of doing anything else, namely, when the fibroid hangs down and becomes a polypus. The proper course then is to cut through the stalk with a pair of scissors and the patient is cured. The fibroid may project into the uterine cavity. By dilating the cervix, if there is a submucous fibroid present you feel it. The size up to which it is possible to remove a submucous fibroid may be expressed in one of two ways. If it is no larger than a fœtal head, or if you can press it down into the pelvic cavity, it should be removed by the vagina. This operation depends for its success on three things. First, sufficient dilatation of the cervical canal. You must have extensive dilatation of the cervical canal, for the cervix must be wide enough to admit a finger and an instrument, because you cannot use instruments inside the uterus without having a finger to direct them. This dilatation of the cervical canal can be obtained by tents, the enlargement being protracted over two or three days; first one tent, and then three, and then five or six. In that way you can get the cervix large enough to admit the finger and one or two instruments, and then the tumour can be removed.

There are other ways of dilatation beside this. You may dilate the cervical canal by Hegar's dilators. This is speedier but less safe, because dilatation is produced rapidly, so that there is danger of tearing the cervix. I have not seen but I have heard of a case of fatal hæmorrhage being produced by rapid dilatation with Hegar's dilators. Gradual dilatation of the cervical canal by means of tents is better. Another method is

to incise the cervix. M. Péan, of Paris, incised the cervix bilaterally, and others have done it along the anterior wall, and in that way got at the tumour. I think that is less safe and less satisfactory than the gradual dilatation of the canal by tents.

But whatever way is adopted, free opening up the cervical canal is one thing upon which success depends. The second is, the cutting up of the tumour into small parts. In Victor Ward there is a pair of forceps which many of you have seen, designed for laying hold of tumours about the size of an orange. But no one ought to attempt to drag out a tumour of that size in one piece. You ought to lay hold of it by a volsella, pull it down to the os uteri, and then cut it away bit by bit with scissors. It is a tedious operation, but safe.

The third requisite is that upon which the safety of every operation depends, namely, the careful observation of antiseptic precautions throughout. This is necessary, especially in a long operation, which involves a good deal of manipulation of the parts.

Any submucous tumour whose chief part projects into the uterine cavity, and which can be pressed into the pelvis, should admit of removal in this way. If the tumour does not project so far into the uterine cavity that its equator is free, you may have a difficulty in distinguishing where the tumour ends and where the uterine wall begins, and then you will not get it away so easily. What should be done, if possible, is to get away the tumour and leave the uterus uninjured, which can be done in the case of many submucous tumours.

There is another class of tumour in which the same thing can be done. If a subperitoneal fibroid is held by a stalk, it ought to be possible to cut through that stalk and then sew the cut surfaces together in such a way as to leave the patient safe from haemorrhage. When that is done the patient is relieved of her tumour and is not robbed of any essential part of her structure. This operation is seldom called for, because tumours to which it is applicable seldom give trouble enough to make any operation necessary. But in a case which was in the hospital eighteen months ago a stalked subperitoneal fibroid was pressed down into the pelvis and caused great pain, which

was relieved by taking away the tumour. Hæmorrhage can be prevented in such a case, either by making flaps of the pedicle and sewing them together, or folding one flap over the other. If too vascular for this to stop bleeding, hæmorrhage can be checked by tying the uterine arteries—one or both, according to the position of the pedicle. In the case I refer to I tied the uterine artery on the side on which the tumour grew. The patient made a good recovery, and was restored to perfect integrity.

Supposing we have a tumour which does not so project into the uterine cavity that we can be sure of removing the tumour without injuring the uterus. In that case, if the tumour is causing symptoms, the question is one of either enucleation or of hysterectomy by the vagina. If the uterus can be pressed down into the pelvic brim, it ought to be possible either to remove it or to enucleate the tumour by the vagina. The enucleation of the tumour means that the operator proceeds as for hysterectomy, and opens the uterus along the anterior wall. If the tumour is in the anterior wall you will see it, and it may be possible to shell it out. Other tumours may be shelled out with greater or less difficulty, according to their size and situation. The tumours may be removed from their beds and the uterus sewn up again. This can be done, but it is not often practised; if the patient is old, say over forty years, she is so near the cessation of the uterine functions that it is not important to leave the uterus behind. And a uterus in which various cavities have been torn by enucleation is so damaged, that to remove it is better. The cases are few in which a patient with fibroids is young enough to make it worth while to run any additional risk involved in conserving the uterus. But if, when you proceed to hysterectomy, you can easily remove the tumour and leave the patient her uterus, that may be done, especially if the patient be young.

In the operation of vaginal hysterectomy, the vagina is opened by making a transverse incision in front and just above the insertion of the vagina into the cervix. If the tumour is large and that incision does not give room enough for the uterus to come down, it can be enlarged by an additional incision in an antero-posterior direction. The next stage is to separate the bladder from the front of the uterus with the

fingers. One advantage of the vaginal method over the abdominal is that it is easier to separate the bladder and ureters from the uterus from below than it is from above. The ureters are in close relation with the vagina and not with the peritoneum, and in performing hysterectomy the safety of the bladder and ureters is obtained by carrying out the separation through the cellular tissue freely and extensively towards the sides. The next step in the operation, as it is usually done, and as I think, is best, is to secure the broad ligaments. There has been much argument as to which is better, ligatures or forceps. Some prefer ligatures and others forceps. I do not think it makes much difference which is used. Lately I have used both, tying the arteries first, and then obtaining additional security by means of the forceps. If one trusts alone to forceps they sometimes slip, and if one relies upon ligatures they may slip also. Some operators do not use any of these means, but trust to seeing the vessels and picking them up as they bleed. I think it is safer to secure the vessels before cutting rather than after. Having secured the vessels in the broad ligaments, the next step is to pull down the cervix uteri to the vulva, if possible—and it generally will be possible—then to divide in its long axis the anterior wall of the uterus and expose the fibroid. Then the size of the uterus may be diminished either by enucleating the fibroids from their beds or by freely cutting up the uterus and the tumours. The uterus can be cut up to any extent, and thus its size diminished, and in that way it can be got out. An advantage of the vaginal method of operating over the abdominal is that there is less shock. The shock in a case in which the abdomen is opened depends on the amount of chilling of the surface exposed and the manipulation of the viscera. If the peritoneal cavity is only opened in its lower part, there is less chilling and manipulation of the viscera than when the abdomen is opened in front, and therefore there is less shock in the vaginal operation. Moreover, no scar in the abdominal wall is caused, and we know that the liability to ventral hernia is considerable after laparotomy. The longer patients are watched after abdominal operations the greater is the proportion of them known to have ventral hernias.

Vaginal treatment of any kind is only appropriate when the tumour is not larger than a child's head, and can be pressed

down into the pelvis. But there are fibroids which cannot be pressed down into the pelvis, and if that is not possible the tumour cannot be removed by the vagina, and some abdominal operation must be performed.

When you open the abdomen to remove the fibroid, there are four different operations which may be done. They are (1) enucleation, (2) oöphorectomy, (3) supra-vaginal amputation of the uterine body, and (4) hysterectomy, or pan-hysterectomy as it is sometimes called, though the prefix "pan" is superfluous. Two proceedings have been described under the term "enucleation." With one the name of Professor Martin, of Berlin, is associated; it consists in opening the uterine cavity, shelling out the tumour, and sewing up the uterus again. Statistics show that the mortality from Martin's operation is higher than that of amputation of the uterine body, therefore I do not practise or recommend it. The other is making incisions over the tumour, shelling the tumour out, and then closing the cavity left. If you have a tumour which projects on the surface of the uterus, there can be no harm in enucleating the tumour. If you enucleate the tumour and find you cannot easily close the place in which it lay, you can amputate the uterus. If the tumour projects much out at the side, it may separate the folds of the broad ligament so that you cannot feel the uterine artery. There, then, is an advantage in enucleation, for after enucleating the tumour you can identify the uterine artery with ease. So that enucleation is both of assistance to hysterectomy and may be performed for itself.

For most cases the best operation is the supra-vaginal amputation of the uterine body. The first step in that operation is to transfix the peritoneum enfolding the round ligaments, and tie each round ligament in two places and then cut through it, between the ligatures. Division of the round ligament allows the uterus to be pulled up better. Then transfix each broad ligament, tie it in two places, and divide them between the two ligatures. The ligatures furthest from the uterus are the essential ones, those near the uterus only being to prevent the field of operation being soiled by bleeding. Whether the ovaries are removed depends on the age. If the patient be young you may leave them, because by so doing you will avoid a premature climacteric.

Then cut through the peritoneum in front of the cervix uteri, and separate as much as possible the bladder and peritoneum from the uterus. That is best done by using a sponge to press down the peritoneum. Then feel with the finger and thumb for the uterine arteries. If the cervix be long and free you can feel the uterine artery on each side with ease. Pass a ligature with an aneurysm needle beneath each uterine artery and tie it. The ovarian arteries have already been secured in the ligatures tying the broad ligaments. When you have tied the arteries, the body of the uterus can be cut away without the occurrence of bleeding. It is well to cut the body of the uterus away higher than you intend to leave the stump, in case the uterine artery should have been imperfectly secured. It may branch at a different place from the normal, and you may have secured the upper branch and yet have left the lower branch conveying blood to the uterus. If you have secured the uterine arteries there will be no hæmorrhage, and you can prepare the stump in two flaps. Then, I think, it is best to bend one flap over the other. Suturing of the flaps over the stump, although it is a good thing, is not essential, for Baer says that if the stump is properly trimmed (I think he cuts it off quite low) when it is dropped back without any suture being put into it, the folds of peritoneum as completely cover the stump as if it had been sewn over it. I have done that, but I did not find that the folds of peritoneum covered the stump: perhaps I did not do it rightly. But the patient recovered without any bad symptoms, and did as well as if the stump had been covered by peritoneum. Some operators think it necessary to do things to ensure what they call making the cervical canal aseptic. Bacteriologists find that the cervical canal is one of the few parts of the human body which are, as a rule, free from bacteria. If it be true that the cervical glands have a bactericidal effect, there is no need to render the canal aseptic. I have not found harm result from the omission to introduce antiseptics into that region.

The other operation is what is called pan-hysterectomy or hysterectomy. In that operation the uterine arteries have to be tied further from the cervix than in supra-vaginal amputation of the uterine body. The further out you tie the uterine arteries, the greater is the danger of including the ureters in the ligature.

As a matter of fact, the ureters have been tolerably frequently included in the ligature in operations of this kind. When you are going to amputate the uterine body you can tie the uterine arteries as close to the cervix as you like, because you are not going to cut away the cervix, and there is no danger of including a ureter in the ligature, the ureters being an inch off. Having tied these uterine arteries, the cervix is cut away. The only case in which I can see any advantage in removing the cervix is when there is reason, from the rapid growth and vascularity of the tumour, to think that it is a sarcoma, in which case the whole uterus ought to be removed. In a case of ordinary fibroid I see no reason for thus prolonging and complicating the operation. And then, the cervix is the central part of the pelvic floor, and the patient's condition cannot be improved by removing it. I see no advantage in taking away the cervix uteri, when an ordinary fibroid exists in the uterine body.

When amputation of the uterine body was first done for uterine fibroids, it was the practice to encircle the stump with ligatures, and it was found that no arrangement of ligatures could be depended upon to stop the bleeding because, the stump being made of muscular tissue, it shrank, the ligatures became loose, and bleeding took place. The result of that was that the intra-peritoneal treatment of the stump was for a time abandoned, and the use of a clamp took its place. Good results have been obtained by the clamp, but it brings about sloughing of the tissue clamped. The clamp involves the interposition of the piece of cervix between the edges of the wound, which are therefore not united throughout their whole length, and so there is a greater tendency to the production of a ventral hernia after the use of the clamp than when the incision is secured along its whole length. For that reason the clamp has been practically discontinued. Nevertheless, there may be now and then a case in which the stump may still bleed when you think you have secured the uterine artery. In such cases the clamp has its use. I think the clamp is not likely to be used much in the future.

There is another proceeding, and that is oöphorectomy. Fibroids, when the ovaries are removed, shrink and cease to grow. It is said that this does not happen in every case.

It has happened in every case in my experience, and my suspicion is that in the cases in which that effect has not followed the assumed removal of the ovaries, it has been because the ovaries were not completely removed. You cannot tell how far ovarian tissue extends along what appears to be the ligament of the ovary. The only way of ensuring complete removal of all ovarian tissue is to take care that the ligatures are a good distance from the bulk of the ovaries. When this operation was introduced, independently by Mr. Lawson Tait, Professor Hegar, of Freiburg, and Dr. Trenholme, of Montreal, hysterectomy was very dangerous because, strange as it may seem, it does not seem to have occurred to anybody, previous to 1886, to tie the uterine arteries before cutting away the body of the uterus. The uterine arteries had been tied before by Professor Freund in abdominal operations for cancer of the uterus, but the mortality of that operation was very high. When oöphorectomy was introduced no means were known of preventing the hæmorrhage after the cutting away of the uterine body. The mortality of oöphorectomy was much less than that of hysterectomy, and it was found effective in stopping hæmorrhage and causing the fibroid to shrink. But effective as oöphorectomy is, it cannot be more effective than removal of the fibroid itself. In large fibroids, the difference in the mortality between oöphorectomy and amputation of the uterine body is slight, because with a large fibroid the broad ligaments are expanded, and it is difficult to get a good pedicle for oöphorectomy. Moreover, large fibroids often so displace the ovaries as to make it difficult to get at them. And then, we know not yet what are the ulterior effects of the operation. It is said that it is sometimes followed by insanity: no doubt this is so, but I know of no evidence that it is oftener followed by insanity than is any other operation of similar severity. Operation on any patient is a shock and a strain on the nervous system, and operation is sometimes the exciting cause of insanity, but removal of the ovaries has no more to do with insanity than any other operation of equal gravity. Then it is said that a fibroid which has shrunk after oöphorectomy is apt to become the seat of sarcomatous or some other kind of degeneration. I can recall two cases in which that has appeared to be the case, but it is a

subject upon which we have at present no exact knowledge. All we can say is that a fibroid which has been made to shrink by the removal of the ovaries is not a healthy tissue, and a patient with such a degenerate fibroid within her is not so well off as one in whom the tumour has been removed. If the patient be young she may complain of the early menopause which is produced by the removal of the ovaries. If the tumour is removed and the ovaries are left, the natural functions are not interfered with. So in that way the treatment of fibroids by oöphorectomy is inferior to removal of the fibroids or of the part of the uterus in which the fibroid has grown.

But there may be cases in which oöphorectomy may have to be considered. Supposing you have to deal with a uterus which is adherent, or round which the cellular tissue is thickened, or in which a small tumour grows out laterally. In a uterus which is enlarged laterally, often the uterine arteries or ureters are displaced. It may then be safer to remove the ovaries. It is only in such cases, which are few, that oöphorectomy can now be considered as a desirable thing.

I think the electrical treatment of fibroids is now almost extinct. It has been used in the London Hospital, but we have not obtained any good results from it. Here, as well as elsewhere, unquestionable uterine fibroids have been shown over and over again to exhibit no diminution in size by the treatment. Moreover, there have been deaths recorded from the application of electricity by puncture, and there have been other cases in which the treatment has produced sloughing. So that I think the harm following the electrical treatment of fibroids is greater than the benefit. Indeed, the evidence leads me to doubt whether electricity has any beneficial effect.

INCOMPATIBILITY AND SOME OF ITS LESSONS.

By WALTER G. SMITH, M.D.,

Ex-president Royal College of Physicians, Ireland; Physician to his Excellency the Lord Lieutenant; King's Professor of Materia Medica and Pharmacy, School of Physic, T.C.D.

[*Continued from p.* 521.]

(5) *Chalybeates.*

The following points should be noted:

The reaction between Syr. ferri iod. and Pot. chloras has been already explained. Potassium chlorate is not incompatible with ferric salts.

Ferrous carbonate is insoluble (Rule 3), and intentional incompatibility is exhibited in Mist. ferri co.; and in Pilula ferri, B.P.

$$Fe\,SO_4 + K_2CO_3 = FeCO_3 + K_2SO_4$$

A similar change happens when Blaud's pill comes into contact with water.

Both ferrous and ferric oxides are insoluble (Rule 1).

Therefore, all *inorganic* iron salts are incompatible with alkalies and their carbonates.

To suitably combine perchloride of iron with arsenic, use Liq. arsen. hydrochlor., and not Liq. arsenicalis (K_2CO_3): and, to prescribe iron in effervescence, add the iron salt to the *acid* bottle, or, use a "scale preparation."

The double salts, Ferri et ammon. citr. and Ferrum tartaratum behave differently, and are not precipitated by alkalies in the cold. Hence, this combination—a common one—is justifiable. Ferri et quin. citr. is less stable, and gives a reddish brown precipitate of ferric hydroxide with Liq. potassæ and a white precipitate of quinine with Liq. ammoniæ. Syrup, glycerine, or mucilage retard or inhibit the precipitation of iron salts by alkalies, but ferric chloride and mucilage, unless well diluted, form a tenacious brown jelly. Glycerine or sugar hinders the oxidation of ferrous salts; *e.g.* Syr. ferri iodidi.

6. *Insoluble sulphates* (Rule 4).

Of these, lead sulphate is the only one of importance in pharmacy.

It is inexcusable to prescribe together soluble lead salts (nitrate : acetates) with the "SO_4" radical; *e.g.* Ac. sulphuric.

dil., or, Ac. sulphuric. aromat.: alum,* or, zinc sulphate. The last combination is sometimes defended upon the singular ground that insoluble lead sulphate is the really important ingredient (!) Zinc acetate should be substituted for the sulphate. As already explained, either alum or zinc sulphate rubbed up, in the dry state, with sugar of lead, undergo double decomposition.

Liq. plumbi subacet. gives a *green* precipitate with Infus. rosæ acidum (H_2SO_4) owing to a secondary action of the basic lead salt upon the colouring matter of the red rose.

The apparently isomeric sulphocarbolates of zinc and sodium do not react as sulphates, and are compatible with lead salts, because they do not contain the diad ion "SO_4". They are really salts of monobasic sulphonic acid, $SO_2\begin{matrix}OH\\H\end{matrix}$, and are therefore phenol-sulphonates.

i.e. $NaOH{\cdot}C_6H_4SO_3$ and $Zn\,(OH{\cdot}C_6H_4{\cdot}SO_3)_2$

In B. P. 1885 the formula was inadequately presented as—

$$Na\ C_6H_5SO_4.$$

Sulphocarbolates should not be confounded with true phenol-sulphates (ethereal sulphates):

e.g. $C_6H_5O{\cdot}SO_2ONa$,

which are decomposed by boiling with HCl, phenol and an ordinary sulphate being produced. Ethereal sulphates occur in urine after the administration of phenol.

7. *Insoluble chlorides* (Rule 5).

The most important salt in relation to pharmacy is AgCl, produced whenever $AgNO_3$ comes into contact with the ion chlorine.

$$Ag\ NO_3 + NaCl = AgCl + Na\ NO_3$$
$$6AgNO_3 + Cl_6 + 3H_2O = 5AgCl + AgClO_3 + 6HNO_3$$

Hence—

(*a*) The necessity for using pure distilled water (free from chlorides, and from CO_2) in preparing solutions of $AgNO_3$.

* The following stupid prescription was ordered :—

Zinci sulph.
Alum. exsicc. āā ʒi
Ac. tannici ʒi
Aquæ ʒi

M. A teaspoonful in a pint of tepid water as a lotion.

(*b*) The utility of NaCl as a means of neutralising any excess of $AgNO_3$ when locally applied, to the eye or elsewhere; and, as an antidote in poisoning.

(*c*) The impropriety of prescribing $AgNO_3$ along with soluble chlorides or hydrochlorides, *e.g.* hydrochlorides of cocain or morphine. The nitrates of the alkaloids would be admissible.

When chlorine is not in the ionic, *i.e.* dissociated state, as *e.g.* in chloral and chloroform, $AgNO_3$ does not form a precipitate of AgCl, and is, therefore, used as a test for free chlorides in either of these compounds. Stains on the skin resulting from $AgNO_3$ are best removed by potassium cyanide.

(8) *Insoluble sulphides.*

The sulphides of all the heavy elements are insoluble (Rule 1), and some of them are of distinctive colour, facts of much importance in qualitative analysis.

Most insoluble sulphides are black, hence—

(*a*) The black stools passed after the use of preparations of iron (FeS) or of bismuth (Bi_2S_3).

(*b*) Burton's "blue line" on the gums or cheeks, as a result of chronic lead poisoning (PbS).

(*c*) The incompatibility of Bism. subnitras with Sodii hyposulph. (thiosulphate).

(*d*) The risk of causing black marks upon the skin if preparations of Hg or Pb are applied along with or followed by sulphur, or by preparations containing it in an unoxidised state.

I have seen a patient's face stippled with black dots (HgS) as the result of a mercurial application followed by a preparation of sulphur. A lad, after taking ichthyol internally for an erythematous eruption of the face, used a "lactate of lead" lotion,* and speedily the pores of the skin were blackened owing to the elimination of some sulphur through the skin (R. Crocker).

Zinc sulphide is white; and accordingly preparations of zinc, if ordered in conjunction with sulphur or sulphides, will not cause discoloration on the skin.

Potassa sulphurata (liver of sulphur) and zinc sulphate

* The formula given by Crocker for lead lactate (*sic*) is: Solution of subacetate of lead, ʒi, fresh milk, ʒij. Shake well together in a bottle.

are sometimes combined in a lotion, and white zinc sulphide will be precipitated.

(9) *Insoluble tannates.*

Tannic acid precipitates most of the heavy elements, and is incompatible *e.g.* with tartar emetic (vinum antimon.) Tartar emetic is a salt very readily decomposed either by weak acids or alkalies.

Tannic acid also precipitates gelatin, starch, albumen, and most of the alkaloids.

(10) *Alkaloids.*

In view of the highly poisonous properties of some alkaloids their incompatibilities deserve careful study.

(*a*) Nearly all alkaloids in the *free state* are sparingly soluble in water (Rule 1), and they do not readily form carbonates.

Hence their salts should not be prescribed along with alkaline carbonates or hydroxides; *e.g.* acetate of morphine with bicarcarbonate of sodium or potassium; or Liq. strychn. with Sp. ammon. aromat. Even borax partially precipitates morphine and codein. If arsenic and strychnine are combined, use Liq. arsen. hydrochlor. Morphine is soluble in excess of Liq. potassæ, and quinine in excess of Liq. ammoniæ.

℞	Pot. bicarb.	ʒv	
	Liq. strychninæ	ʒiss	
	Inf. gent. co.	ad ℥viij.	M.

The bottle was finished up to the last two doses, and laid aside for a fortnight. A sediment was then noticed in the bottle, and after taking the last dose the patient suffered severely from symptoms of strychnine poisoning.

A lady in Johannesburg died in 1898 as the result of taking a mixture containing Liq. arsenicalis and Liq. strychninæ. The physician who ordered the mixture was indicted for culpable homicide. One of his prescriptions was:—

Liq. arsenicalis	℥i	
Liq. strychninæ...	℥i	
Tr. strophanthi	ʒiij	
Tr. capsici	ʒi	
Aquæ	ad ℥vi	

Chem. and Druggist, October 12th, 1898.

In effervescing mixtures the alkaloidal salt should be added to the *acid* bottle.

(*b*) Most alkaloids are precipitated by—

(i) Tannic acid (not easily by gallic acid).

Acetate and meconate of morphine are precipitated by tannic acid, but not the hydrochlorate or sulphate.

(ii) Tincture of iodine, *i.e.* I+KI.

Iodide of potassium alone precipitates some alkaloids from strong solutions.

℞ Pot. iodidi	ʒiiss	The quinine will be precipitated,
Ferri et quin. citr. ...	ʒij	in part, by the ammonia, and,
Tinct. nucis vom. ...	ʒij	slowly, as hydriodide.
Sp. ammon. arom. ...	ʒss	
Aquæ	ad ʒviij	
M.		

(iii) Double iodides, *e.g.* Donovan's solution (Liq. arsen. et hydr. iod.); Mayer's reagent (potassio-mercuric iodide).

Caffein and theobromin are not thus precipitated.

℞ Pot. iodidi	ʒi	Double iodide of bismuth and
Ac. hydrocy. dil. ...	ʒss	potassium is formed (Dragen-
Liq. bismuthi ...	ʒiij	dorff's reagent) which precipitates
Quin. sulph.... ...	gr. xij	the quinine.
Ac. hydrobrom. ...	ʒiss	
Aquæ	ad ʒvi	
M.		

(iv) Picric acid. This furnishes a convenient test for quinine in the urine. The precipitate is distinguished from albumin by its complete solution when heated, and reprecipitation upon cooling.

(*c*) Caustic alkalies decompose the solanaceous alkaloids (atropin : hyoscyamin) and impair or destroy their therapeutic efficacy.

A common error, and one of long standing, is the combination of Liq. potassæ with Tinct. or Succus hyoscyami.

(*d*) Many other salts of alkaloids are sparingly soluble *e.g.*, quinine acetate, benzoate, borate, citrate, hydriodide and hydrobromide.

℞ Ferri et quin. citr.	...	...	...	℈ij
Pot. citratis ..	...	..	..	ʒij
Ac. citrici ...	...	...	...	ʒi
Aquæ ...	...	...	ad ʒvi.	M.

In a few hours nearly all the quinine was precipitated as acid citrate in large crystals, and it was impossible to administer the medicine.

R	Quin. sulph.	...	...	gr. x
	Pot. acet. ...	...	...	gr. xx
	Ac. sulph. dil.	...	...	♏v
	Aq. cinnam.	...	...	ad ℥i. M.

Mixed in any order a voluminous precipitate of quinine acetate is thrown down.

A lady lost her life by taking a mixture containing strychnine and bromide of potassium. The last dose contained nearly all the strychnine.

Salicylate of sodium and quinine solutions form a voluminous precipitate of quinine salicylate, *e.g.*

Quin. sulph.	...	...	grs. xx
Sod. salicyl.	...	...	ʒiss
Ac. sulph. dil.	...	...	ʒi
Aq. pimentæ	...	...	ad ℥viij. M.

(*e*) Most of the incompatibilities of alkaloids can be overcome or prevented by dilute HCl, or by alcohol in the proportion of 12 to 40 per cent. of the solution, because alkaloidal salts are usually soluble in alcohol.

In view of the above statements the practical rule emerges :—

All poisonous alkaloids should, so far as possible, be prescribed in simple solution, and not in too concentrated a state.

A woman, aged 57, took the last dose of a mixture containing Liq. strychn. and Liquor bismuthi with Sp. ammon. aromat. In ten minutes she was seized with tonic spasms, involving the face, neck, and body, and was dangerously ill for five hours (*Pharm. Jour.* March 25, '93).

In especial, morphine and strychnine should not be prescribed in solution along with large quantities of an iodide, bromide, or chloride.

Liq. hydrarg. perchlor. alone, *slowly* precipitates strychnine from Liq. strychninæ in delicate acicular crystals : also quinine.

Ac. hydrocyan. dil., or even Aqua laurocerasi, may from solutions of morphine slowly precipitate insoluble morphine cyanide.

A few additional examples of unsuitable or dangerous alkaloidal prescriptions are appended in illustration of the foregoing remarks :—

℞ Tinct. guaiaci ammon.	ʒij	An utterly hopeless jumble.
Mucil. acaciæ ...	... ʒij	
Quin. sulph. ...	gr. viij	
Ac. sulph. dil. ...	... ʒiv	
Pot. bicarb. ...	... ʒi	
Aquæ ...	ad ℥iv	
M.		
℞ Liq. strychn. hydr.	♏100	Quite hopeless.
Liq. arsenicalis	... ♏70	
Liq. potassæ ...	... ʒij	
Aquæ ...	ad ℥iij	
M.		
℞ Pot. iodidi ...	... ʒiss	After twelve hours crystals of hydriodide of strychnine are deposited.
Liq. strychn. ...	... ʒiss	
Aq. menth. pip.	ad ℥ij	
M.		
℞ Quin. sulph. ...	... ℈i	Wrong from more than one point of view.
Ac. citrici ...	... ʒiiss	
Syr. ferri iod. ...	... ℥i	
Potass. iod. ...	... ʒi	
Tinct. iodi ...	... ʒiss	
Aquæ ...	ad ℥viij	
M.		
℞ Pot. brom. ...	gr. 100	This mixture cannot be dispensed clear.
Pot. bicarb. ...	gr. 80	
Quin. sulph. ...	gr. 20	
Syr. zingib. ...	... ʒvi	
Aq. menth. pip.	ad ℥viij	
M.		
℞ Spir. amm. arom.	... ʒvi	The quinine separates as a sticky precipitate.
Pot. brom. ...	... ʒij	
Ferri et quin. citr.	... ʒi	
Aquæ ...	ad ℥vj	
M.		

℞ Morph. Sulph. ... ... gr. i
Pot. Bicarb. ... ... gr. 90
Aquæ ... ... ad ℥ij. M.
ʒi with ʒss lemon juice.

The morphine is precipitated by the carbonate, and if the bottle had not been shaken before mixing with the lemon juice, the last dose would have contained nearly all the morphine.

Explosive and Inflammable Compounds.

Many dangerous and some fatal accidents have happened through carelessness or ignorance of first principles, and I propose now to adduce the more important examples which have occurred in practice.

An explosion may be defined as a sudden and stormy decomposition, attended with noise, and frequently with flame.* It is evidently a non-reversible reaction.

Danger may arise from dealing with either—

(*a*) Unstable single molecules.

(*b*) Processes of rapid and violent chemical reaction between two or more substances.

I. **Unstable Molecule,** *i.e.*, one containing a store of energy in a condition of stress. This energy is liable to be suddenly liberated, with evolution of much heat:

(i) Hypophosphites of calcium and sodium:—

$$Ca(PH_2O_2)_2 : NaPH_2O_2.$$

These salts are likely to explode when simply heated or triturated. A druggist who was engaged in drying some calcium hypophosphite over a sand-bath was killed by the explosion.

Calcis hypophosph. ...	ʒss	M. Ft. pulv. vi.	One 3 times
Potass.-chlorat. ...	ʒss		a day.

When separately powdered and carefully mixed, they were being removed from a glass mortar by a metal spatula, when they suddenly exploded and half stunned the dispenser, blowing off some of his eyebrows and eyelashes (*Ph. Journ*, 3rd Ser., XI. 506).

(ii) Picric acid and picrates. *Lyddite* is a mixture of picric acid and gun-cotton.

(iii) Nitro-glycerine (trinitrine).

May explode when shaken or agitated. The Liq. trinitrini

* It has been shown in the General Part that Berthelot's law of maximum work has limitations. Thus:—

$$C + S_2 = CS_2 \text{ (endothermal).}$$
$$C + O_2 = CO_2 \text{ (exothermal).}$$

B. P., when diluted with water, and let stand, deposits a liquid of oily consistence; one drop of which, absorbed by paper and struck with a hammer on a hard surface, explodes.

$$2C_3H_5(NO_3)_3 = 6CO_2 + 3N_2 + 5H_2O + O$$

(iv) Erythrol tetranitrate.

An accident by which a chemist lost his life happened at a tabloid factory in Deptford in 1897. He was engaged mixing tetranitrate of erythrol with finely powdered lactose in a mortar, when an explosion occurred.

A medical man was sent a sample specimen of the same drug. He carelessly threw the bottle containing it into the waste-paper basket. Next morning the basket was emptied into a dust-pan containing hot ashes. An explosion ensued: the cook was partially stunned, and received about two dozen small wounds on the hands, arms, and face.

Mannitol hexanitrate explodes violently on being struck with a hammer, or when suddenly heated.

(v) Iodide of nitrogen.

The chemical nature of this compound has been already explained.

It is extraordinary that combinations of Liq. ammoniæ and Tinct. iodi, or Liq. ammoniæ with Tinct. iodi and collodion, have been recommended as safe for external use, for serious accidents have occurred (Kobert).

II. **Rapid chemical action**, *i.e.* oxidation or reduction.

This mode of action is naturally observed, chiefly in connection with compounds rich in disposable oxygen; *e.g.* chlorates iodates, nitrates, chromates, permanganates, and peroxides.*

(*a*) *In the dry state*—

It is dangerous to triturate potassium chlorate or nitrate with—

(*a*) Free sulphur, or Pulv. glycyrrh. co. (contains 1 in 12 of sulphur);

(*b*) Antimonious sulphide; †

* True peroxides develop peroxide of hydrogen (H_2O_2) with acids, and should be distinguished from dioxides (*e.g.* Mn O_2) which form salts with acids.

† The following prescription was presented at a pharmacy in New York :—

Lactis sulphuris	...	..	gr. iij
Antimon. sulph. aurant.		...	gr. iii
Zinci valerian. ...	...	...	gr. i
Potassæ chlor. ...	...	...	gr. ij. Ft. pulvis.

This cannot be dispensed without an explosion.

(*c*) Finely divided carbon, *e.g.* in dentifrices ;

(*d*) Tannin, *e.g.* catechu.

A mixture of Pot. chlorate, ℥iss, with ℥iss of tannic acid, was rubbed in a new Wedgwood mortar with a rough surface. A violet explosion occurred.

(*e*) Sugar : Saccharin.

(*f*) Hypophosphites. This is very dangerous.

A young pupil rubbed up a mixture of $2\frac{1}{4}$ parts of hypophosphite of calcium, $3\frac{3}{4}$ parts of potassium chlorate, and $\frac{1}{3}$ part of lactate of iron. Suddenly the whole mixture took fire, and there was a violent detonation. The young man received such severe burns that his life was endangered.

(*g*) Mercuric oxide detonates if rubbed up with iodol.

(*b*) *In the liquid or moist condition.*

(i) Nitric acid acts violently upon phenol, creosote, and on some volatile oils, *e.g.* Oleum terebinthinæ.

Sawdust has been set on fire by spilling strong nitric acid upon it.

A mixture of nitric acid, hydrochloric acid, and Tinct. nucis vom. exploded after some hours (Kobert).

(ii) Chromic acid, CrO_3, if concentrated, will set fire to glycerine or alcohol.

Such a prescription as this should not be dispensed :—

Ac. chromici	℥ss	For external use.*
Glycerine	℥iv	

or Ac. chromic., glycerine, alcohol, equal parts.

(iii) Potassium permanganate can likewise ignite glycerine or alcohol, and detonates when rubbed up with Confect. rosæ.

Ext. nuc. vom.	gr. $\frac{1}{6}$	The pill mass, when triturated in a mortar, exploded.
Ext. aloes aq.	gr. 1	
Pot. permangan.	gr. 1	

An unlucky apothecary attempted to dispense the following formula :—

* A dispenser dissolved the chromic acid in a little water, added the glycerine, and shook up the mixture. Explosion ensued and scattered the contents of the flask.

Pot. permangan.	...	āā	10 parts
Alcohol			
Distilled water	...	15	,,

Scarcely had the bottle been corked when an explosion took place, and the boiling liquid spurted into the face of the surprised pharmacist. He nearly lost the sight of one eye, and was disabled from work for more than a month.

(iv) Iodine reacts violently upon, and may inflame, some volatile oils, *e.g.* Ol. terebinth. and Ol. limonis.

A medical man set about manufacturing terebene by acting upon oil of turpentine with pure sulphuric acid. An explosion followed and burnt his clothes. Worse would have happened but that he had taken care to envelope the bottle in a towel.

(v) Oxide of silver, freshly precipitated, develops much heat when rubbed up with creosote, confection of roses, or extract of gentian. Occasionally pills containing the oxide have exploded several hours after dispensing. Silver oxide also forms a very explosive compound with Liq. ammoniæ.

(vi) Potassium chlorate + tinct. ferri perchlor. + glycerine, when warm is liable to explode.

This event happened in the pocket of a patient who carried a bottle containing this mixture.

Another time a similar mixture exploded under the influence of the solar rays and set fire to the house.

$$2KClO_3 + 4HCl = 2KCl + Cl_2O_4 + Cl_2 + 2H_2O.$$

A curious accident happened in London. A man who was packing capsules of amyl nitrite broke some of them by chance, and the wrapping wool, soaked with the liquid, was thrown out of the window. It happened to fall through a grating beneath which was an open barrel containing chlorate of potassium, which, on contact with the amyl nitrite, blazed up, and nearly set fire to the building.

(vii) Peroxide of sodium (Na_2O_2).

This substance, a light yellow powder, is now an article of commerce, and is prepared on the large scale by the action of air upon metallic sodium at 300°. It is used for bleaching.

When added to water it developes much heat and liberates oxygen :—

$$Na_2O_2 + H_2O = 2NaOH + O.$$

This reaction has been utilised in the study of the respiratory function in animals in a confined space. The products, viz. oxygen and caustic soda, are precisely those necessary to absorb CO_2, and replace it by oxygen. Calcium peroxide (CaO_2) has been suggested by Nencki and Zalesky as an intestinal antiseptic.

If some of the peroxide be wrapped in muslin, or in cotton wool, and water be dropped upon it, the whole bursts into flame.

The peroxide at once sets glycerine on fire, and if added to commercial formalin a very violent explosion occurs.

This latter experiment should be performed only with small quantities.

A bandage which had been soaked in solution of peroxide of hydrogen ignited when dry.

MONGOLIAN IMBECILITY IN INFANTS.

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To the alienist physician the type of imbecility known as Mongolian or Kalmuc is familiar, as the subjects of this condition, if they survive long enough, usually drift into asylums. To all who practise amongst children the subject is of importance, because the affection is not uncommon, and while easy of recognition when the type is known, it is apt to puzzle those whose attention has not been directed to this form of disease. The following remarks are based on a study of twenty-five cases which have come under my care during the past few years, and are directed to the condition as it appears in infancy and not during the period of asylum life.

As a class these imbeciles are marked by special characteristics, mental and physical, by which they are easily distinguished from normal infants, but in which they resemble each other so closely that they appear to be members of the same family. I have more than once in the out-patient room recognised, as I thought, a former patient who, on further investigation, turned out to be a new visitor of the Mongolian type.

I. First, the *physical conformation* may be considered. At birth the infants are small and growth proceeds at a much slower rate than normally. The skull is usually small and shortened in the antero-posterior diameter at the base, globular and smooth in the convex region. This shortening may render the face and occipital regions flat, or may even go further, so that both of these regions seem actually depressed, as if some force had driven them inwards, or as if, which is probably the case, the basal region of the skull had not developed *pari passu* with the other parts. The fontanelle is large and is very late in closing. The face as a whole is small and rounded, sometimes described as "full moon," but often the features are blurred and swollen from excess of fat as in other babies. The bridge of the nose is flat or sunken, and the overlying skin is lax and frequently extends over the eyes for some distance as epicanthic folds, thus giving an appearance of increased distance between the eyes. The cartilaginous part of the nose is broad and "buttony," with alæ extended laterally, and the openings of the nostrils directed upwards. The eyes appear small from the narrowness of the palpebral fissure, which is further characterised by an oblique position, sloping downwards and inwards. These two conditions in the eyes impress on the face its peculiar appearance, and suggested to Dr. Langdon Down the name "Mongolian." Nystagmus and squinting are often present during the first six months of life, but pass off as the infant grows. The mouth is usually kept open and the tongue is often protruded, a condition partly due to the large size of that organ, and partly to the diminished space in the buccal cavity. It is to be noted, however, that this protrusion of the tongue is by no means constant, as in cretinism, and the frequent protrusion and retraction rather suggest a snake-like action, while during sleep the tongue may be kept entirely within the mouth. The upper respiratory passages, nostrils, nasopharynx, and pharynx are diminished in size, and snoring breathing is common.

The chest does not present any special peculiarities, but the abdomen is large and distended. Umbilical hernia and protrusion of the bowel between the recti muscles on crying are frequently present. The pelvis is small and the rotundity of the abdomen is probably induced partly by the upward displacement of some of the pelvic contents, such organs as the bladder being

felt with unusual distinctness in the abdomen. The long bones of the extremities are, as a rule, shorter and smaller than usual. The hands are short and square, and the little fingers and thumbs are often small in proportion to the length of the other digits. Dr. Telford Smith[1] has directed attention to another peculiarity in the little finger, in which "the second phalanx is considerably shorter than normal and there is much lateral displacement of the terminal phalanx," producing a marked outward bowing or curve of this digit. He regards this as a constant peculiarity in the Mongolian imbecile. It has been frequently but not invariably present in my cases amongst infants. The ligaments of the large and small joints are loosely strung, so that one, on lifting a foot, can rattle the bones at the knee and hip joints, hyperextend the knee, and find abnormal mobility in the ankle and toe joints. The fingers can be bent backwards to touch the arm, and the thumb has a very wide range of movement. For some months this laxity of the joints persists to such an extent that the limbs and trunk can easily be packed up into the position which is characteristic of intra-uterine life. Although this condition of the joints has been ascribed to the looseness of the ligaments, I believe that another factor in its production is usually present, namely, muscular hypotonia, or a delayed development of the normal muscular tonicity. The limbs often drop in a manner suggestive of paralysis and the muscles feel abnormally flabby, but movements can be performed in a manner which disproves any possibility of there being a real paralysis. Attention has been directed by Dr. John Thomson[2] and Dr. Archibald Garrod[3] to the occurrence of congenital heart disease in connection with Mongolian imbecility. This is another example of the delayed development present, and is due to incomplete closure of some of the fœtal structures. Of my cases five (*i.e.* 20 per cent.) presented a well-marked systolic murmur, loudest at the base of the heart, and evidently congenital. Two of these patients died, and in one, aged six months, the right ventricle was hypertrophied and the interventricular septum was not closed; in the other, aged thirteen months, there was a patent ductus arteriosus with hypertrophy of the right ventricle and of the left auricle. Occasionally other congenital deformities are present. One patient, kindly sent to me by Mr. Jackson Clarke, had been treated by him for congenital club foot.

Another case was recently admitted to the Children's Hospital, Paddington Green, with an imperforate anus, and on operation the rectum was found to terminate about three-quarters of an inch from the skin surface. Other congenital defects were revealed at the necropsy on this patient, namely (1) cystic left kidney and dilatation of the left ureter with hypertrophy of the bladder, and (2) a stricture of the second part of the duodenum with dilatation of the first part, which formed a sac as large as the stomach.

When the infant is quiet or asleep, the facial peculiarities may not at first sight strike one, and much additional information is

Fig. 1.

gained by observing the habits and movements of the child. The action of the facial muscles in smiling produces a grimace, in crying a contortion, both being very different from the normal appearances, and accompanied by marked wrinkling of the skin of the face. On crying, the lips are firmly pursed up, the lower one is protruded, and both may become swollen and everted. The eyelids swell up like tense bladders, although not previously œdematous, and sometimes their margins are everted so that the conjunctival surfaces are visible. When the child is awake facial movements are active. There is a habit of protruding the tongue and then drawing it back with a smacking noise, or of sucking the protruding tongue. The lower jaw is often pro-

jected forwards, and the upper lip sucked in by the lower one. Lying on its back, with its feet in the air, the study of its own toes seems to afford the infant the greatest of pleasure for a prolonged period, as judged by the accompanying smiles and guttural sounds. The normal crowing sounds of infancy are replaced by peculiar throaty noises, sometimes more suggestive of a lower animal than of a human being. If a Mongol infant is quietly watched, its grimaces and facial contortions will be found to be most characteristic, and some of these have been successfully delineated in the accompanying drawings (Figs. 1 and 2).

II. The *mental characteristics* of these infants are not manifested by any special perversion or defect, save that in every way the development of intelligence lags behind that of a normal infant. On this subject one cannot gain much information from the parents. The mother will declare "this is the best baby I ever had," having noticed with pleasure the absence of the trouble she had with her other infants. The child can be put aside to play with its fingers or toes, and will lie there placidly smiling and requiring no attention. In an infant of six or twelve months such an excess of goodness is not normal, and the actively developing mind can tolerate no such prolonged periods of rest during waking hours. Until it may be the age of nine or twelve months, or even longer, the mother has no suspicion that anything is wrong mentally, and then it may be the delayed attempts at talking, or the guttural sounds produced, that make her seek advice. The expression of the face, however, from the very first is fatuous, and the development of all the mental faculties is extremely slow. The power of fixing the eyes, of following objects with the eyes, of observing things, and all the other signs of dawning intelligence, are backward, so that at the age of twelve months the mental development will not be greater than that of a normal infant of six months. At the same time, it must be noted that this form of imbecility is not characterised by the dulness and lethargy of some others, for the child smiles, and in time imitates readily, recognises the people about it, and is frequently abnormally shy with strangers, although curiously inquisitive about them.

Growth and development proceed slowly. Dentition, even in the absence of rickets, is much delayed, it being not un-

common to find only one or two teeth cut at the eighteenth month. Muscular power and co-ordination are slowly acquired. The infant is backward in learning to support its head, to sit up, to walk. Both talking and walking may not be learned until some time between the third and fifth years. In the society of other children these powers may be developed earlier through the faculty of imitation. The body is small at birth and continues so for some time, but after the age of two years, and more especially at puberty, there may be a marked deposit of adipose tissue. These children are capable of education, and

Fig. 2.

although the point attained will never be equal to that of a normal child of the same age, the possible limit will be more nearly reached in special institutions than under home training. The oldest I have met with was a girl of twelve, who was well developed generally but rather stout, and who retained the characteristic facial expression with the movements referred to. She could read some letters but not words, probably owing to the fact that she had had nothing but home training. Taken as a whole, they are pleasant and affectionate imbeciles, who are not capable of earning their own living, or of taking care of themselves, and consequently drift into asylums, where they form from five to ten per cent. of the inmates.

Predisposition to disease and early death.—The prospect of life in a Mongol infant is bad. Their vital powers are much below normal and they bear illness badly. The temperature is

subnormal and sensitiveness to cold is a marked feature. Some, starting in life the subjects of active syphilis, quickly waste and die. Others succumb rapidly to infantile diarrhœa, or bronchitis, or broncho-pneumonia. Advice is first sought for some of these infants on account of chronic constipation. Tarsal ophthalmia and rhinitis are common affections. The mouth breathing predisposes to diseases of the respiratory organs, and the catarrhs of early life are apt to develop into pulmonary tuberculosis during childhood. Convulsions may occur, but not with greater frequency than in other delicate infants, so far as my experience goes, and they are symptomatic rather than organic.

Pathology and morbid anatomy.—We have seen that, clinically considered, Mongolism is a form of congenital imbecility with physical changes and defects. From the nature of the latter one infers that there has been some interference with normal development during intra-uterine life; from the imbecility one infers that a cerebral defect or lesion is the main factor. As far as I am aware, there is no evidence from *post-mortem* examination of structural disease in other parts of the body, apart from those developmental defects to which reference has been made, and which must be regarded as secondary. Nor can the affection be traced to the absence of any internal secretion, as in cretinism. I have found the thymus, the thyroid, and the supra-renal glands to be structurally healthy, and treatment by thymus and thyroid extract has proved useless.

As regards the condition of the cranial structures one point is prominent—namely, the alteration in the shape of the skull from a diminished antero-posterior diameter at the base. This may depend on one of two conditions, either (1) premature ossification of the basilar bones, or (2) defective growth in the structures at the base of the brain.* No evidence has been adduced to show that in these cases there is a premature synostosis of the basilar bones, and my colleague, Dr. Leonard Guthrie, was able to demonstrate at an autopsy on a Mongol child that there was an abundance of soft cartilage in the bones

* Compare the discussion as to the origin of microcephalic idiocy, regarding which two possible causes have been suggested: (1) premature ossification of the bones of the cranial vault, and (2) imperfect development of the cerebral lobes. It is now generally accepted that the primary lesion is in the cerebral lobes, and that the non-development of these leads to the early closure of the fontanelle and mall size of the cranial vault.

forming the base of the skull. Dr. Fraser[4] reported that the basilar bones were normal in the skull of a female Mongol aged forty years, and stated that this case was certainly not due to the early ossification of any of the sutures, most of them being still soft. There is no evidence, therefore, that the skull is primarily at fault.

The other possibility is that the structures at the base of the brain are not fully developed, and this is supported by the experience of Dr. A. W. Wilmarth,[5] who examined the brains of five Mongol idiots and reported as follows:—"In all these the brains are of good size for imbecile brains, the pons and medulla alone being very small, weighing in each case about one half ounce, whereas the natural weight is nearly twice as much. From the small size of the pons and medulla in every instance, there seems to be a strong probability that the low nutrition, and possibly the other anatomical peculiarities of this group, may be due to the imperfect development or absence of certain cell groups in this region." In a recent autopsy on a Mongol infant fourteen days old, I found a similar condition. The pons, medulla, and cerebellum were strikingly small relatively to the size of the cerebral hemispheres. Whether a congenital defect in the basal structures of the brain would produce this type of imbecility it is impossible to say, but probably there is also some change in the higher centres which is not so manifest and which has not yet been discovered. But such a condition of the basal structures does explain certain of those physical changes on which stress has been laid, and which are as characteristic of Mongolism as the mental symptoms. Just as in microcephalus deficient expansion of the cranial vault is believed to follow from imperfect development of the cerebral lobes, so in Mongolism deficient expansion of the base of the skull would follow imperfect development of the basal structures of the brain. The marked facial peculiarities, to which reference has been made, would also be explained on this assumption. One can understand the depression of the face, most marked in the nasal region; the diminution in the capacity of the nostrils, naso-pharynx, pharynx, and mouth; the obliquity of the orbits from limitation of growth in the mid line, but unchecked expansion of the cranial vault upwards; the tendency to protrude the lower jaw beyond the upper, growth being restricted in the latter while

unimpaired in the former; and the grimacing face from the altered shape of the facial bones and, therefore, an altered action of the muscles attached to them.

Etiology.—It must be remembered that the characteristic features of Mongolism are present at birth, and they are of such a nature as to suggest a causative agent at work from a very early period of fœtal life. General causes, such as parental alcoholism, nervous disease or insanity in the family, etc., are not likely to produce such an exact type of disease as exists in Mongolism. It seems probable that one and the same cause is at work in all cases, and that this is some disease that affects the fœtus *ab ovo*, and is directly inherited from one or both parents. Amongst such possible diseases tuberculosis has been suggested, but a parental history of that affection does not stand out prominently amongst my cases. On the other hand, I have been struck by the prevalence of hereditary syphilis. Out of a total of twenty-five cases syphilis was definitely present in eleven patients, and from the symptoms and history it was strongly suspected in three others. This is a large proportion, even allowing for the frequency of syphilis in infants, and my investigations amongst the earlier cases were not specially directed to this point, nor were the patients all seen at an age when the evidences of the disease would be pronounced. It has suggested to me that Mongolism may be syphilitic in origin, not an active manifestation of hereditary syphilis, but due to an arrested development of certain parts of the brain from disease in the germinal cell—a parasyphilitic condition. Amongst the parasyphilitic conditions, to which Fournier[6] has directed attention, are delayed mental and physical development leading to imbecility and infantilism, and weakened vitality leading to early and often sudden death. These, also, are characteristic of the condition under discussion. Active syphilitic disease may in these cases be communicated during fœtal life, or it may not, and its absence cannot be regarded as disproving the syphilitic origin of Mongolism. The incidence of active syphilis in fœtal life is followed by a succession of symptoms pointing to progressive disease. In Mongolism, on the other hand, all the evidence indicates the existence of some factor leading to an arrest of development at a very early stage, without progressive disease. Further investigation is required to determine the exact

etiological factor, but I believe it will be found to be a definite parental disease and not a general degeneracy, and the association of parental syphilis and Mongolism is sufficiently frequent to suggest a causal relationship.

Treatment.—It is stated by some authorities that thyroid gland treatment has a beneficial effect in Mongolism, but such has not been my experience. I have given it a prolonged trial in four cases, and with the exception of a loss of weight and a rise in temperature, no perceptible change in the condition was effected. A similar result has followed from the employment of thymus gland. Two patients aged respectively seventeen and fourteen months have been treated with thymus gland tabloids in increasing doses up to fifteen grains daily, and at the end of six months no alteration in the general condition could be detected. Many of those patients, as already stated, present signs of active syphilis, and while these manifestations have been improved by the usual anti-syphilitic treatment, I have not been able to discover any change in the mental or physical characteristics of Mongolism. The statements of the parents as to the results of any course of treatment are absolutely unreliable, as they are quite unable to distinguish between the mental and physical development of the infant—which goes on in Mongols as in other children, although at a much slower rate—and a definite alteration in the Mongolian characteristics.

In the absence of any known cure for the disease, treatment must be general and symptomatic. The sensitiveness to cold and the subnormal temperature suggest warm rooms, warm clothing, and abundance of fatty food. Special attention ought to be directed to the inflammatory affections so frequent in the eyes and nose, and local treatment carried out in those parts by means of bathing and syringing. The onset of acute illness, diarrhœa or bronchitis, must be at once followed by special precautions and care, as the infants frequently succumb to these affections with great rapidity. In my experience the symptoms resulting from the congenital cardiac disease have not been such as to call for any treatment, and the condition itself seems to pass off as the child grows. The same remark applies to the umbilical hernia which usually disappears without any special treatment.

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ON TEMPORO-MAXILLARY ANKYLOSIS AND ITS RELIEF BY EXCISION OF THE NECK AND CONDYLE OF THE LOWER JAW.

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It is scarcely too sweeping a statement to say that temporo-maxillary ankylosis receives but scant notice in current text-books on surgery. Yet the condition is one of so much moment to the patient, on account of the interference with dentition and the regulation of the teeth, mastication and speech, and the operative results for its relief are so satisfactory, that no apology is required for bringing my experience before the profession.

Fixation of the jaw may be temporary or permanent. With the former I do not intend to deal, as it depends on tetanus, some reflex irritation of the muscles of mastication, parotitis, or other inflammatory condition, and it passes off as the cause subsides. Permanent fixation is ankylosis, and may be due to extra-articular or intra-articular causes. These might be classified as follows:—

1. *Traumatic.*—This may be extra-articular where there has been loss of tissue with such subsequent cicatrisation that the opening of the jaws is an impossibility (Case IV.), or it may be intra-articular from fracture or contusion leading to arthritis

(suppurative or non-suppurative), and ultimately to the formation of intra-articular adhesions (Case V).

2. *Non-Traumatic.*

(*a*) *Suppurative.*—If this cause be extra-articular it results from tuberculous or septic inflammation in the parts about the joint, with subsequent cicatricial contraction. If, on the other hand, the ankylosis be intra-articular, it may be caused by a true arthritis, probably tuberculous, originating in the joint itself, or the joint may be affected secondarily. Thus the arthritis may be pyæmic, it may follow a suppurative parotitis,

Fig. 1. The joint has been cut vertically, and that part turned forwards on to the zygoma to show completeness of ankylosis.

or, more commonly, may be set up by the virus of otitis media reaching the joint through the Glaserian fissure.

(*b*) *Non-Suppurative.*—This may occur as an osteo-arthritis —fortunately an uncommon manifestation of the disease—or even more rarely as a gonorrhœal arthritis.

It must be borne in mind that fixation of the joint may occur from injury to the temporal muscle, or such injury or periostitis of the coronoid process as to produce an immobility of that part (Case III.).

The result of these affections is an ankylosis, which may be osseous or fibrous, and either at the joint or the coronoid process, and the ankylosis may be unilateral or bilateral. Practically it is often a matter of difficulty to decide which joint is affected, and whether the condition is limited to one side. To determine this point one has to be guided by the presence of cicatrices,

thickening about the joint, felt either externally or from within the mouth, and by the presence of defective hearing on one side. Still, it is not always possible to say which side is the affected one, and in such cases both sides should be prepared for operation.

Certain secondary results follow in time the permanent fixation of the jaws. The inferior maxilla becomes smaller, or if the condition has occurred early in life, remains small. The angle becomes more obtuse, the chin slopes inwards, and the muscles—temporal, masseter, and pterygoid—become fatty and atrophied. The patient has to feed himself by crushing all solid food, and forcing it into the mouth between the teeth, or through the spaces where teeth have been broken or extracted, and partly from this and partly from attempts to force the jaws apart by levers or wedges the dental arches become displaced, so that the front teeth are directed more or less forwards instead of directly downwards. The atrophy of the lower jaw, too, causes the lower dental arch in front to be directed against the buccal surface of the corresponding upper teeth. The efforts to squeeze food in between the teeth result in functional hypertrophy of buccinator muscles. The ankylosis and its secondary effects on the bones are well shown in Fig. 1, a skull which I have fully described elsewhere.[1]

It is in my opinion useless to discuss operations for the relief of ankylosis of the jaws other than excision of the neck and condyle, because the results obtained by this procedure are so vastly superior to those obtained by other methods. Before, however, proceeding to give details of the cases on which I have operated, it will be advisable to consider the anatomical relations of the area of operation (Fig. 2). The condyle of the lower jaw lies in the glenoid cavity, with its long axis directed from without inwards and slightly backwards. The centre of the joint is a finger's breadth in front of the osseous external auditory meatus. Of the structures which cover the joint, the parotid gland naturally first claims attention. It extends upwards as high as the zygoma, and part of it dips behind the condyle to occupy the posterior part of the glenoid fossa, thus accounting for the frequent affection of the joint in suppurative parotitis. In order to reach the joint the gland must be partly divided or pulled downwards and forwards. In the parotid

below the condyle of the jaw, the external carotid divides into the internal maxillary and superficial temporal arteries. Passing backwards from the superficial temporal are the superior and inferior auricular arteries, vessels which, though necessarily divided in the incision which I recommend, are too small to give any trouble. In the parotid also the facial nerve

Fig. 2.—Diagram of arrangement of structures about temporo-maxillary joint.

a, Inferior maxilla; *b*, superior maxilla; *c*, malar; *d*, orbit; *e*, squamous temporal; *f*, temporal ridge; *g*, pinna; *h*, external auditory meatus; *i*, parotid and duct; *k*, external carotid; *l*, transverse facial artery; *m*, *m*, superior and inferior auricular arteries; *n*, great auricular nerve; *o*, facial nerve; *p*, posterior auricular nerve; *s*, auriculo-temporal nerve.

divides into its principal divisions and breaks up to form the pes anserinus. The temporo-facial division lies nearer the site of incision than does the cervico-facial, and much injury of the former results in marked facial paralysis (Fig. 5). Making its exit about the level of the upper part of the lobule of the ear and running upwards close to the pinna is the auriculo-temporal branch of the inferior maxillary division of the trigeminal nerve. The articulation is further covered by the masseteric fascia and masseter muscle, and finally the internal maxillary artery runs below the condyle.

The operation for excision of the neck and condyle of the jaw, as I now practise it, and which I have evolved from the experience gained in the undermentioned cases, is as follows:— The incision commences above on a level with the upper margin of the orbit, just over the temporal artery, which can easily be felt pulsating. It is carried downwards and slightly backwards till it reaches the zygoma, a finger's-breadth in front of the external auditory meatus. It is then continued directly downwards till it reaches the level of the anterior attachment of the lobule. The incision includes the skin, superficial and deep fascia, and this flap is then reflected downwards and forwards. The auricular arteries of the superficial temporal are divided. The auriculo-temporal nerve remains untouched behind the incision, while the temporal artery and the upper branches of the temporo-facial division of the facial nerve, except perhaps a few fibres to the occipito-frontalis muscle, are carried downwards and forwards in the flap. It is sometimes necessary to divide the superficial temporal artery at the upper end of the incision, and if so, it is better secured with a suture than with a ligature, as the superficial fascia here is rather dense, and the ligature may be rubbed off in subsequent manipulations. This flap then having been freed as far as the lower border of the zygoma, the masseteric fascia is freely divided along the margin of the bone, and it, with the parotid, is pulled downwards and forwards also. This is a transverse incision, but a vertical notch may be made also, if necessary, to allow of more free manipulation. The knife is now entered below the zygoma and carried down to the condyle, and thence a vertical incision carried through between the fibres of the masseter muscle as low as the lowest level of the sigmoid notch, and the muscular fibres separated with a periosteum elevator. Guided by this instrument, a chisel is now conveyed down to the bone. The chisel is next lateralised at the lower angle of the incision, and the neck of the bone is cut through obliquely from below upwards, the anterior part being cut at the lowest level of the sigmoid notch. It is, I have found, important that the bone be chiselled through at its lower limit first, because it is below the level of the internal maxillary artery, but chiefly because the bone is in a way pyramidal, and it is easier to cut through the base of the pyramid after the apex has lost its support by separating it from the rest of the jaw.

The chisel is then applied at the site of the joint, and the base of the pyramid divided. The loosened portion is then driven forwards into the wound with forceps, and the external pterygoid muscle cut loose. If now the ankylosis be unilateral, it will be found quite easy to separate the dental arches, but if this cannot be done, the chisel is slipped forwards across the sigmoid notch and the coronoid process divided. There is no bleeding. The wound is stitched up, and no drainage is required. I employ a chisel to divide the bone, because it is more easily managed and more accurately regulated. It is impossible to use a pair of bone forceps in dividing the bone below without unjustifiable injury to the tissues, because the wound is not large enough to admit a sufficiently strong pair. A chain saw is out of the question, on account of the difficulty in passing it, and on account of its tendency to slip upwards. One of our best manuals on operative surgery recommends that after the bone is divided below, the upper part is twisted out with necrosis forceps. If the wound is large enough to admit such forceps, the proceeding may be possible if the union be fibrous, but it is quite impossible if the ankylosis be osseous.

The following cases illustrate the method of operating, some of the complications met with, and the results after the operations.

Case I. (Figs 3 and 4) was that of a boy, aged twelve years, in whom the ankylosis had followed an attack of suppurative parotitis complicating scarlet fever five years previously. The condition before and after treatment are well shown in the photographs. In this case the neck and condyle were excised through a vertical incision extending from the zygoma to the upper part of the lobule of the ear. I found, however, that this gave me too little room, and I removed a smaller piece of bone than I intended. The result after about three years was that the lad could only open his mouth about half an inch, and I determined that in my next case the incision should be a longer one. The result in all these unilateral operations is a certain amount of obliquity of the lower jaw, but this in no way affects the functional success of the operation.

Case II.—Male, aged twenty-eight years, had suffered from ankylosis for four years after parotitis accompanying scarlet fever. The parotitis did not suppurate. Here I made a longer

incision, with the result that I notched the parotid and divided numerous branches of the facial nerve. Perhaps the facial

Fig. 3.—*Case I.*—Before operation.

passed higher up in the gland than usual, or the gland may have been partially destroyed by the original parotitis; but be

Fig. 4.—*Case I.*—After operation.

that as it may, the result was marked facial paralysis, which was rendered all the more objectionable on account of a previously existing internal strabismus (Fig. 5).

Case III. was sent to me by Dr. Hood, of Blairgowrie. The patient, a girl aged ten years, had suffered from closure of the

Fig. 5.—*Case II.*—Facial nerve divided by too free incision.

jaws for three and a half years. It had followed an abscess inside the mouth during a severe attack of typhoid fever. She

Fig. 6.—*Case III.*—After extensive operation. Shows fulness of cheek on affected side.

had never had any aural discharge. The abscess was accompanied by a good deal of sloughing of the tissues. She had

been operated on several times without any permanent improvement. The fact that temporary improvement followed some of these operations showed that the ankylosis was fibrous, and that the fibrous tissue had been cut or torn at the time of operation, and that the closure reappeared as the cicatrix was formed anew. Considering also that the initial abscess had pointed inside the mouth, it was probable that the lesion was about the coronoid process and the temporal insertion. I determined to remove the neck and condyle of the jaw, in order that the subsequent cicatricial contraction should be allowed for. I planned and carried out the operation which I have described fully above, with the most satisfactory results. This flap operation gave me plenty of room—an absolute necessity—for I found that the coronoid was much thickened and enlarged, and firmly fixed to the zygoma. The whole of the coronoid process to the bottom of the sigmoid notch I excised. No facial paralysis followed this extensive dissection, and the subsequent movement was excellently satisfactory. The photograph (Fig. 6.) illustrates well another result of the operation, namely, an increased fulness of that cheek. This is due to the soft parts being stretched over a shorter area, as the distance between the zygoma and the angle of the jaw is diminished.

Case IV. was that of a boy aged twelve years, who seven years previously had been run over by a cab. The temporal region had been severely lacerated, and the lower jaw broken in two places. The cicatrix of the former injury, and the narrowing of the left palpebral fissure thereby, is well seen in the photograph. The same incision was used as in Case III., and the coronoid process divided, and the result was all that could be desired.

Case V. was sent to me by Dr. Dendle, of Dunfermline. The patient was a woman of thirty years, and the ankylosis had existed for twenty-seven years. When three years of age she had had a severe fall, alighting on her chin. Immediately afterwards ankylosis had set in. She presented all the features of old-standing ankylosis of the jaw, the bone being small, the angles obtuse, and the teeth projecting. At seventeen years of age she had been operated on without success. When she came under my observation it was impossible to say which joint was at fault. I therefore excised by the flap operation one condyle,

and divided the coronoid. The removal of the ankylosis on this side, however, did not allow of separation of the jaws, and I

Fig. 7.— *Case IV.*—After operation. Shows the slight obliquity of the lower jaw.

therefore turned the head and similarly excised the other condyle and divided the coronoid process. The result now was that the

Fig. 8.—*Case V.*—Result after bilateral excision.

mouth fell wide open, the muscles having lost their *point d'appui*, the lever its fulcrum. As the wounds healed, however,

control of the jaw was rapidly regained, and the result was very satisfactory and was uncomplicated by any facial paralysis.

These cases constitute a series at once interesting and instructive. Interesting, because it shows that the condition is entirely curable; that the muscles, even after many years of disuse, reassume their functions within a few days after their utility is made possible: and instructive because it shows that with a carefully planned incision and subsequent dissection, the entire condyle, neck, coronoid process, and even a portion of the ascending ramus of the jaw, can be removed with but little deformity and no paralysis.

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THE RELATIONSHIP OF MEMBRANOUS INFLAMMATION OF THE NOSE TO DIPHTHERIA.

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It is curious that until comparatively recently membranous, fibrinous or croupous rhinitis, as the affection is variously named, should have received but scant attention at the hands of the profession: for the disease is by no means an uncommon one, and it possesses, in addition to certain minor titles to the interest of the physician, the important claim (in at least some instances) of an undoubted relationship to diphtheria.

Schuller first described the malady in 1871, and for a considerable period it was looked upon as being quite distinct from diphtheria; some later observers, however, have advanced the thesis that it is a mild variety of that specific infectious disease.

Membranous rhinitis may be defined as a sub-acute or chronic affection of the nose, characterised by a fibrinous or membranous exudation on the mucous membrane of one or both nares. The exudation presents the anatomical features of a false membrane, being imposed upon the epithelium, without, as a rule, involving to any great degree, the deeper tissues. Bosworth,[1] H. L. Lack,[2] and others, state that the disease is common, and cases of membranous rhinitis form

no less than 2½ per cent. of all the children attending Lack's hospital practice. The membrane rarely extends to the throat; the constitutional symptoms are slight, and the course of the affection prolonged, lasting it may be six or eight weeks or more. Clinically, therefore, the disease is unlike true diphtheria: but a bacteriological examination reveals, in the majority of instances, the Klebs-Löffler bacillus in various degrees of virulence. The disease, moreover, has been traced from cases of pharyngeal diphtheria, and proved occasionally to be infectious, either reproducing itself or a form of sore throat.[2] In certain instances, on the other hand, the most careful search fails to reveal the Klebs-Löffler bacillus, and there is no history of infection. An example of this form has occurred in my own practice and is quoted below. The difficulty of putting the disease into its correct nosological pigeon-hole is increased by the fact that a form of membranous rhinitis may follow cauterization of the nasal mucous membrane. A study of the current literature on the subject is also apt to render confusion worse confounded, on account of the diametrical opposition of the views held by various authorities as to the nature of the disease. Thus Musser,[3] Eeman,[3] Buys, Lack[2] and others, appear to consider all cases of membranous rhinitis to be of diphtheritic origin; whereas McBride,[4] Hamilton Potter,[3] Walsham,[3] and Lennox Browne[5] disbelieve in the identity of the two affections; and the last-named writer observes: "This membrane may be removed without exposing a bleeding surface. . . . Risk of contagion is remote. Cultivation and inoculation experiments give negative results. The neighbouring glands are not involved, and no one has found the Klebs-Löffler bacillus." On the other hand again, Strazza,[1] in a report of two cases, remarks that he discovered the Klebs-Löffler bacillus in one; Concetti reports the discovery of the same bacillus in two cases out of five. Lack[2] carried out a bacteriological examination in thirty-three of his cases; the Klebs-Löffler bacillus was present in every instance; the organism was of full virulence on animals, producing virulent toxins and being neutralised by antitoxins. This observer found the disease to be very infectious, either giving rise to itself or to a mild form of sore throat. Casselberry[6] reports two cases of membranous rhinitis in which exposure to diphtheritic infection was the probable

cause. In neither of these were there any constitutional symptoms worthy of the name, but in both the Klebs-Löffler bacillus was found in the nasal exudate. One of these cases is quoted immediately below :—

Case 2. Dr S——, a young physician, was interne at the Children's Free Hospital of Detroit during an epidemic of diphtheria. A few days after the cessation of this continuous exposure he noticed an inflammation in the left nostril, which progressed to the point of total occlusion by swelling and a white exudate, with an excoriating discharge. He stated that this exudate had been so plentiful that shreds could readily be detached. He was examined about the seventh day, at which time the membrane consisted of a mere film covering the excoriated surface which embraced the vestibule, the cartilaginous septum, and the anterior part of the external nasal wall, extending backwards not exceeding three centimetres. A culture was taken and examined by Dr. Gehrman, of the Chicago Health Department, in conjunction with his assistant and the patient himself, who reported the presence of Klebs-Löffler bacilli. There were no constitutional symptoms, and convalescence was complete in three weeks.

From the foregoing evidence it seems logical to conclude that at least some instances of membranous rhinitis owe their origin to the specific organism of diphtheria; and, conversely, if we base our diagnosis on the discovery, or the reverse, of this bacillus, that other cases are undoubtedly non-diphtheritic in their nature.

The following case appears to be an example of this latter form :—

F. W., eleven years: female, came under the writer's care at the Throat Department of the Manchester Consumption Hospital in May last. She complained of excessive blocking of the nose and nasal discharge. No history of infection, either by scarlatina, diphtheria, or measles, could be elicited. The condition began, fourteen days before admission, as a sensation of fulness and tickling in the nose, which was followed in a few hours by a watery discharge. The child appeared to have a severe "cold in the head." There had been no antecedent shivering or vomiting. The nasal discharge, which was at first thin, in a few days became thick and tenacious, and as the

blocking of the nostrils increased rather than diminished, the patient was brought to the Hospital.

On examination, both nostrils were found to be filled with a thick, whitish, non-offensive discharge which, on being wiped away, revealed a thin, pearly, friable membrane covering the septum and turbinated bodies as far back as a view could be obtained. The membrane extended, anteriorly, almost to the muco-cutaneous junction, and where the edge of the new formation could be seen it was observed to be skirted by a narrow red areola. The membrane was easily rubbed off, but bleeding followed the manipulation. The pharynx and naso-pharynx were unaffected. There was some slight swelling of the cervical glands, on both sides, but no tenderness of these structures. Temperature 99° F. (morning); pulse 84; trace of albumen in the urine. The child, although somewhat anæmic, did not appear to be suffering from any grave constitutional condition. An examination of the membrane at the Bacteriological Laboratory at Owens College, Victoria University, Manchester, resulted in a failure to discover the Klebs-Löffler bacillus. As I wished to be as certain as possible on this point, I sent, two days later, a second piece of membrane to the Bacteriological Laboratory, but the report again stated that no diphtheria bacilli had been found. The only treatment employed was the intra-nasal application of warm, weak solutions of bicarbonate of soda, borax and carbolic acid. The membrane gradually peeled off, and had entirely cleared up in about one month from the onset of the disease. There were no paralytic sequelæ, and, so far as could be determined, no infection of other individuals occurred.

Schiffer[3] and others have reported similar cases in which also no Klebs-Löffler bacilli could be found.

The usual symptomatology of membranous rhinitis is as follows:—The disease, which occurs in both children and adults, may be ushered in by chilly sensations, or even, more rarely, by a definite rigor which is soon followed by a general febrile condition; and in children the fever persists in a mild degree throughout the illness. Symptoms of acute rhinitis rapidly supervene, indicated by swelling of the nasal mucous membrane, watery discharge, stenosis of the nasal passages and sneezing. The dry stage of acute rhinitis is omitted and the discharge at once commences to flow. In about three days a membrane will

have formed: this extends backwards a variable distance and may even embrace the throat, although its extension beyond the nose is quite exceptional. The nasal stenosis becomes very severe and is associated with headache and loss of smell. At the onset, the thermometer will often register 101° to 103° F.; it usually falls to 100° or 101° in a day or two, and remains in children at about this height for the remainder of the attack—in adults the temperature returns to normal, generally on the third day. In these latter individuals the condition is relatively short-lived, for the nose will usually be found clear by the fourteenth day: in children, however, the duration is three to six weeks or more. A recurrence may occur.

In the writer's case, there was, as mentioned above, a trace of albumen in the urine. I do not know whether this symptom has been observed in other cases of membranous rhinitis, where the Klebs-Löffler was absent: but I have noted the complication in an instance of pseudo-membranous tonsillitis (seen with Dr. J. Hepworth, of Eccles), the nature of which we were convinced, from bacteriological and other evidence, was non-diphtheritic.

The presence or absence of the Klebs-Löffler bacillus appears to make no difference in the clinical course of membranous rhinitis, although the infectivity of certain cases is presumably due to the agency of that organism. Edward Meyer[7] made a a microscopic and bacteriological investigation in twenty-two cases; in thirteen, virulent diphtheria bacilli were present, and in nine there were streptococci of little virulence, and the staphylococcus pyogenes albus and aureus. The clinical course in both series of cases was essentially the same.

But it is an easy matter to differentiate such cases—whether the Klebs-Löffler bacillus be present or whether it be not—from instances of primary nasal diphtheria. This rare disease, the incidence of which is said to be about two in 1,000[5], is apt to run a markedly malignant course. The constitutional symptoms are frequently grave; the membrane is not limited to the nasal cavities so strictly as in the instance of its more innocent congener, but involves, in greater or less degree, the posterior surface of the soft palate and the pharynx. Glandular inflammation is usually very intense owing, as Jacobi has demonstrated, to the rich endowment of the mucous membrane of the nose with lymphatics.

The theory suggested by Abbott, H. L. Lack, and others, that certain instances of membranous rhinitis, of the type described above (Casselberry's case), are mild local manifestations of diphtheria, appears to me to be tenable, and more especially on the following grounds: (1) The traceable infection in many cases from ordinary diphtheria; (2) the proved infectiousness of certain recorded instances of membranous rhinitis; (3) the possibility of producing in animals, by inoculations derived from the membrane, virulent toxins which are neutralised by antitoxins; (4) the presence of Klebs-Löffler bacilli.

In addition to the forms of membranous inflammation of the nose which have been referred to, there is a variety which appears to result directly from the section or cauterisation of the nasal mucous membrane. I do not include among these cases those common ones in which a protective covering is developed over the actual parts which have been cauterised: but the rarer instances where, after strictly limited applications of the cautery, a false membrane forms and spreads throughout the fossa. Price-Brown[5] and others have reported such conditions. Price-Brown's patient was suffering from hay-fever, the existing cause being, in that observer's opinion, hypertrophy of the inferior turbinated bodies. Both inferior turbinateds were therefore incised with the galvano-cautery, at one sitting. The following day the lining of the two nasal cavities was covered with a clear, bluish, translucent false membrane, which allowed itself to be peeled off in a day or two without hæmorrhage. A similar operation, performed two years later, on the middle turbinateds, resulted in the formation of a membrane of identical appearance.

With regard to the treatment of membranous rhinitis it may be remarked briefly that iron has been found of value, especially if administered with quinine or cinchona for their general tonic effect. Bosworth recommends that the membrane should be removed, care being taken to avoid injuring the soft parts beneath. Iodoform (or europhen) may then be applied. Warm carbolic alkaline washes are grateful to the patient if their employment is feasible. Moldenhauer advises warm inhalations.

Conclusions.

It appears probable:—

(1) That membranous rhinitis (this term being understood

not to include primary nasal diphtheria) is commoner than is usually supposed, cases being overlooked owing to the mild constitutional symptoms, or regarded as catarrhal rhinitis, etc.

(2) That the disease may occur in one of two forms, which concur in the local appearances, the prolonged course and the mildness or absence of constitutional symptoms, but differ in the presence or absence of the Klebs-Löffler bacillus and in their power of infection.

(3) That the form associated with the Klebs-Löffler bacillus is considerably more common than the simple form and is a mild local manifestation of diphtheria, differing sharply, however, from the usual form of primary nasal diphtheria.

(4) That, inasmuch as the two forms of membranous rhinitis are clinically indistinguishable, a bacteriological examination should be practised in every case, and isolation of the patient carried out, at least until the result of the examination is made known.

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A POST-GRADUATE LECTURE ON AFFECTIONS OF THE CORNEA.

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Gentlemen,—You doubtless remember that the cornea consists of fibrous tissue, covered on both surfaces by epithelium, and that its fibrous tissue is formed of closely woven bands, with intervals between the bundles of fibres forming the corneal spaces. In these spaces of the cornea lie masses of protoplasm, each of which sends out processes that interlace with processes of similar masses that lie in the adjoining spaces. The nutrition of this fibrous tissue or *substantia propria corneæ*, is carried on by means

of the protoplasm lying in these spaces and interlacing channels. Posteriorly, the cornea is lined by epithelium, and between this epithelium and the true corneal tissue there is a well-marked line of basement membrane. This internal, or posterior lining membrane of the cornea, is called Descemet's membrane. The anterior part of the substantia propria is denser than all the rest, and is called Bowman's membrane. The epithelium in front of the true corneal tissue consists of squamous epithelium at the top, and regenerating cells underneath. The squamous epithelium is shed at intervals, and is renewed from the cells beneath. The cornea is nourished, as I have said, by masses of protoplasm, with their interlacing processes, and these, in turn, get their nourishment from a plexus of blood-vessels which lies all round the cornea. From this drawing you will see that the circumcorneal plexus encroaches very slightly on the edge of the cornea: apart from these vessels the cornea is extravascular tissue.

Recognition of diseases or abnormalities of the cornea depends upon our detecting some interference with its normal conditions. There are several normal conditions of the cornea which we may regard as of special clinical importance. I would mention particularly, first, smoothness of anterior surface; secondly, transparency.

The smoothness of surface is due to the squamous epithelium, and the transparency is due to the disposition of the lamellæ of fibrous tissue. Just outside the cornea, a similar fibrous tissue produces one of the most opaque tissues of the body—namely, the sclerotic.

Disease of the cornea, then, may be recognised by lack of one of these qualities.

(1) *Smoothness of anterior surface.*—The surface of the cornea is best examined by placing the patient opposite a window, so as to get a reflected image of the window on the cornea. This image should show all the parts of the window and its frame, but, as the surface of the cornea is convex, the straight sides of the window will become curved, the whole window appearing barrel-shaped. The size of the window-reflex ought, if the eye be healthy, to remain practically the same all over the cornea as the eye is moved, except at the extreme periphery, where the image appears larger. The lines of the frame in the reflex, whether straight or curvilinear, ought to be

perfectly continuous. A serrated or irregular appearance in any part, would show want of smoothness of the cornea at that part. By carefully observing, and, if necessary, magnifying this reflex, one is able to perceive even the smallest interference with smoothness, supposing always, of course, that the patient be able to bear the exposure to light. Where photophobia is present in such a degree as to prevent the proper examination of the eye, superficial anæsthesia may usually be produced by placing a drop of a two per cent. solution of cocaine in the conjunctival sac. If a foreign body be present in the cornea, it will cause a corresponding projection of the surface, and the window-reflex will be interrupted at that point. Abrasion of the cornea is recognised in the same way, the window-reflex appearing irregular and broken; similarly with ulceration, that is, a loss of epithelium secondary to an ulcerating process.

Supposing that there is so much photophobia, due either to a recent abrasion or to ulceration, that, even after the introduction of cocaine, you are not able to examine the cornea satisfactorily for some suspected small loss of epithelium, how should you proceed? A very useful method is to apply a substance which will stain the area from which the squamous epithelium has been removed: such a stained area is much more easily detected than the corresponding irregularity of the window-reflex. Fluorescine constitutes the most efficient stain for this purpose. A small glass rod is dipped in the fluorescine, the lower eyelid pulled down, and a drop allowed to fall from the rod into the conjunctival sac. The eye should then be closed for a second to allow the liquid to be spread over the surface of the cornea. After waiting another second or two, use one or two drops of solution of cocaine or boric acid to remove the excess of fluorescine, close the lids, and wipe them with a little cotton wool. On now examining the cornea, any area from which the squamous epithelium has been removed will be found stained of a vivid green: this stain is quite distinct, and the demonstration is very easy.

Again, in certain conditions, instead of getting the image sharply defined, it may be reproduced as if on ground glass. This is due, not to any want of epithelium, but to absence of perfect smoothness of the squamous epithelium, and the condition is often found surrounding corneal ulceration. This dull

reflex may be found over the whole corneal surface in acute glaucoma, or in deep corneal inflammation. The epithelium is not deficient, but the individual cells in the squamous part are not in themselves lying so disposed as to produce an absolutely smooth surface; they are, in fact, more or less œdematous.

(2) This introduces us to our next heading — want of *transparency*, because lack of smoothness gives imperfect transparency as well. Loss of transparency may arise quite apart from the anterior epithelium, and may be then due either to changes in the true corneal tissue, or to changes in Descemet's membrane.

You may meet with a localised loss of transparency in true corneal tissue, in connection with a limited inflammation in this tissue. In such a case, examination by focal light (as explained in a former lecture) would reveal a small area of opacity of a grey colour. Such a localised keratitis often assumes a yellow hue later, from a collection of dead leucocytes, and then constitutes a corneal abscess. There is usually a slight haze surrounding the dense yellow, central patch, and at the same time you often find a collection of pus at the bottom of the anterior chamber. Later, Bowman's membrane gives way over the abscess, the epithelium is lost, and a purulent corneal ulcer is established.

The corneal tissue proper is also often affected in another way. A haze commences at one part of the periphery, gradually attacks other parts of the periphery, and also spreads centrally, until at length the whole, or nearly the whole of the cornea is involved. On careful examination, you will probably detect fine vessels spreading inwards from the corneal edge, giving a pink tinge to the opacity where they are present. This form is known as *interstitial keratitis*, and is of special clinical importance from its association with inherited syphilis. It does not always occur absolutely in the form I have sketched, and it does not always begin at the periphery. Occasionally it does not involve more than one third of the cornea, and then recedes; but these are exceptional cases. What I have described may be regarded as the typical form. When you examine any case of interstitial keratitis, you will find that, although the inflammation is interstitial, the epithelium is more or less involved; just over the area of opacity the epithelium will be found to be very

slightly raised, and the bars of the window-reflex unduly bulged as they pass over it, and the surface will be observed to be deficient in smoothness. In every recent case of interstitial keratitis, of whatever character, the epithelium is involved. It is important to remember this, because you often find interstitial opacities without any recent inflammation, persisting, indeed, many years after the acute keratitis has subsided, but not associated with any change of epithelium such as now described.

The next form of want of transparency is due to opacities on Descemet's membrane. Small deposits are formed upon the inner surface of the cornea, and these deposits are usually disposed in a characteristic way, viz. in a wedge-shaped pattern, the point of the wedge being towards the centre of the cornea, and its base towards the lower periphery. On careful examination—using focal light and a second lens for magnifying—these deposits are found to be smaller towards the centre than at the periphery. This condition is sometimes called descemetitis. It is, however, not actually an inflammation of Descemet's membrane, but is produced by a deposit of inflammatory material which has been carried from elsewhere. Therefore, it is not really evidence of inflammation of the cornea, but of inflammation of deeper tissues—of the ciliary body and of the iris. Some years ago this condition was often called serous iritis, but we now generally speak of it as catarrhal cyclitis, the idea being that, in the process affecting the ciliary body, a great deal of inflammatory exudation and cells separate from the surface of the ciliary body, and that these products of inflammation are carried forward in the systemic circulation of the intravascular fluids. Thus the products I referred to, as coming from the inner surface of the ciliary body, are carried forward behind the iris, pass through the pupil, and thus gain access to the anterior aqueous chamber. This material is heavier than the aqueous fluid; the larger particles fall gradually to the bottom of the chamber, while the smaller are carried more directly forward toward the cornea, and they finally adhere to Descemet's membrane, so as to produce the wedge-figure described.

Again, it is very common for opacity to appear in the cornea in advanced life, familiar to you as the *arcus senilis*. It first occurs in the form of a bow or arcus near the upper and lower corneal edges: these subsequently extend, and by their junction

form an annular opacity. It is of little or no practical significance, general or local. Other forms of corneal opacity occur, but I have said enough to acquaint you with the principal kinds and with the manner of examining them.

(3) I now wish to say a few words about one or two other clinical features of the cornea which you ought to attend to. I would ask you to remark the *regularity of the corneal surface* —it should present the same curve all over. The best way to test this is to place the patient with his back to the light, and use the apparatus I show you here. It consists of a circular disc, with concentric black and white circles, and a hole in the centre; by holding it properly, and looking through the central opening, you ought to be able to get good images of these concentric circles on a normal cornea. If there be irregularity of the corneal surface, however, the irregularity will be evident in the form of a bulging outwards, or depression inwards, of portions of the circles. The surface may be perfectly smooth, and yet by no means regular; there may be a depressed portion, the site of former ulceration and loss of tissue, the epithelium having been repaired over it, but the corneal images will reveal the existence of this old depressed cicatrix.

(4) There may be a *general abnormality of corneal curvature*. You may, for example, meet with the condition called conical cornea, in which the curvature of the centre is too great and that of the periphery too small. Conical cornea may be examined in several ways. If very well marked, it is best seen by looking at the cornea from one side. The window-reflex will also reveal the condition, the image being conspicuously smaller at the centre than at the periphery of the cornea.

(5) Another healthy condition of the cornea is *tactile sensibility*—it ought to be acutely sensitive to touch: lack of this quality is an indication of disease. The sensibility of the cornea may be tested by a small piece of cotton-wool rolled to a point, by a tiny piece of feather, or a small camel-hair brush. The cornea should be very gently touched with one of these at different points. If it be healthy, the touch will be felt, and will usually produce such a reflex as will tend to shut the eye. If the sensibility be diminished, the patient will either not feel the touch at all, or so little that he will offer no objection to the process, and there is no reflex observable.

(6) The next clinical feature of the cornea that I would mention is non-vascularity. In disease it may become vascular in two ways. (*a*) Blood vessels may form in front of the true corneal tissue—that is to say, beneath the epithelium. I need scarcely tell you that if vessels form beneath the epithelium, you may expect to find that the irregularity of surface produced will be considerable: the whole epithelial surface, indeed, is in such a case thrown into a series of fine ridges, each ridge corresponding to a subjacent blood vessel. Vessels form in this way particularly from two conditions, viz., in phlyctenular ulceration of the cornea, and from pannus, associated with trachoma. In *pannus* the position of the vessels at first is usually where the cornea is covered by the upper lid; vessels may be seen running from above, downwards towards the centre of the cornea, and occasionally a few from below, running upwards. As time goes on, almost the whole of the corneal surface may be invaded by these blood vessels. In cases of phlyctenula, what you find is a small ulceration well within the corneal border, and vessels running from the edge to this corneal ulcer. This form of ulcer sometimes travels towards the centre of the cornea, invading new tissue, and leaving behind it a long line of opacity traversed by a leash of vessels. If several such phlyctenulæ invade the same cornea, numerous distinct vascular areas are formed, with broad peripheral ends, giving rise to a condition known as *phlyctenular pannus*.

(*b*) There is another form of vascularity, in which the vessels occur in the true corneal tissue. I have already alluded to this form in speaking of interstitial keratitis. The epithelium is not thrown into ridges by such vessels, nor do they occur in leashes, but numerous fine branches may be seen invading the corneal edge at short intervals, branching frequently as they pass inwards. As the keratitis subsides these vessels become less marked, and ultimately seem to disappear, for the blood ceases to flow along them: but if such a cornea be examined years afterwards with the ophthalmoscope (by the direct method, with a high plus lens behind the mirror), against the red fundus-reflex there will still be seen fine dark lines travelling inwards. These are the channels in which the blood vessels formerly lay. According to the disposition of these traces of vessels, you will be able to say whether they have been associated with a former

attack of interstitial keratitis, or of phlyctenular keratitis, or of pannus. The recognition of this evidence of past disease may in some cases have an important bearing on the diagnosis and treatment of some other affection in the individual. You are familiar with the fact, that it is by no means uncommon to find that an examination of the cornea gives the first evidence of inherited syphilis. There may be no trace whatever of this disease in any other structures—the teeth, mouth, nose, skull, etc., may be apparently normal; so that this evidence of old interstitial keratitis may be of great clinical importance. We must further consider, then, how to differentiate these varieties of persistent vascular traces in the cornea.

In old phlyctenular vascularity the traces of the vessels run in leashes, and you can usually detect the nebulæ corresponding to the former areas of ulceration.

In an old pannus you will find these lines coming chiefly from above and below, very irregularly, and practically always associated with a persistent irregularity of the corneal surface; but the chief diagnostic point in old trachoma-pannus is that you will find evidence of the trachoma on everting the upper eyelids.

In old interstitial keratitis, on the other hand, the traces of the vessels are seen at fairly regular intervals round the cornea, passing towards the centre, and branching out in a tree-like fashion; the eyelids show no traces of old trachoma, and there are no sharply defined traces of old ulceration. Then, in such cases, further evidence of the character of the former affection may be found in the choroid, or in the teeth, angles of the mouth, etc.

(7) The next feature deserving attention is the *resistance of the cornea.* A normal cornea ought to have sufficient resistance against the pressure of the intra-ocular fluids to retain its proper curve. All the coats of the eyeball have to resist intra-ocular tension, and they succeed in doing so easily so long as this is normal. You probably are aware that the resistance of the cornea is such that, even if the intra-ocular tension be considerably increased for a long time, it retains its usual curve; it is, indeed, the optic nerve which has least power of resistance, and which then becomes atrophied and cupped in consequence. In disease, however, especially in a general keratitis, the tissues of

the cornea become very much softened, and then they bulge in response to the ordinary pressure of the anterior chamber. Such bulging is seen in interstitial keratitis, and also in connection with pannus from trachoma. This bulging of the cornea, after the keratitis has passed away and transparency is so far restored as not to greatly interfere with vision, gives rise, in a secondary way, to myopia.

You will naturally expect me to say something about the *therapeutics of the cornea*. Ocular therapeutics is not, as a rule, difficult; we know exactly what we want to do, and we know the local action of our remedies.

Whenever you meet with any form of keratitis, you will never be wrong in using, during the acute stage, hot fomentations of boric acid, with atropine applied locally. Supposing, however, that you find a peripheral, infiltrated, deep corneal ulcer threatening to perforate, there are certain risks attending the use of atropine. When the pupil is widely dilated, the iris is thrown into loose circular folds near the periphery of the anterior chamber. If, then, this peripheral ulcer bursts, the iris becomes extensively prolapsed into the corneal opening produced by the ulcer giving way, and ultimately there is a large anterior adhesion of the iris to the cornea: this is a common result. In such cases of ulceration we generally use eserine therefor, so as to make the pupil as small as possible, and render the iris tense, and thus aid in preventing such a result as I have described.

In cases of corneal abscess, and of infiltrated corneal ulcer, in any position, the condition sometimes does not improve under the hot fomentations and atropine, and a change to eserine will often produce an immediate beneficial effect. You may say such a course may be warranted as regards the cornea, but that in an extensive corneal affection the iris also is probably involved, and the contraction of the pupil due to eserine will aid in producing extensive adhesion of the iris to the lens capsule. Remember, however, your prime object is to save the patient's eye, and if it becomes a question whether the iris is to become adherent or the cornea is to be destroyed, the iris must be neglected; because an eye that loses its cornea will never be of any use, whereas adhesion of the iris to the lens

capsule admits of moderate vision, and of much improvement by subsequent operative interference. In hypopyon—that is, pus in the anterior chamber—hot fomentations will usually cause its disappearance before long, particularly if the hypopyon be fluid with a horizontal upper surface. I generally like to give quinine internally, in addition, in these cases. If, however, the upper surface of the hypopyon is more or less convex, we have not only a mere hypopyon to deal with, but an exudation of lymph also, which entangles the corpuscles. Hot fomentations probably will not remove this form of hypopyon, and you may act in one of two ways. You may make a fairly broad paracentesis at the lower edge of the cornea—broad, because the material will not come away as a fluid, but as a clotted mass. Should it not come away satisfactorily, even after encouraging it by gentle pressure with a curette at the lower edge of the wound, you should seize the purolymph with a pair of smooth forceps, and pull upon it very cautiously, when it will usually be found of sufficient consistency to be removed in this way. When a corneal abscess is complicated with hypopyon, I do not think the paracentesis should be done in this way; but the incision should be made through the abscess, so as to let the inflammatory accumulation escape from the corneal layers as far as possible, cutting right through the cornea along the entire length of the abscess. Having completed this incision, a sudden gush of aqueous follows the withdrawal of the knife, and along with it the hypopyon is rushed forwards, and either escapes or becomes engaged in the corneal wound, whence it can easily be withdrawn with smooth forceps, as I have already explained. If the hot fomentation be then proceeded with, and a pad fastened pretty firmly over the eye, you will probably find that there is no return of the hypopyon, and that the ulcer is soon clearing and healing.

Of interstitial keratitis I have nothing further to say; hot fomentations and atropine constitute the local treatment. You may give mercury; I generally do so, because I believe it is of service, and I give it in the form of grey powder. Some ophthalmic surgeons do not employ mercury in these cases, and yet obtain, I understand, good results.

In all cases of phlyctenular ulceration of the cornea you have to remember that the actual cause of the disease is a

constitutional one, and that phlyctenulæ have a close association with the tubercular diathesis; of this I am positive. Whenever you find phlyctenulæ, whether in children or adults, carefully examine for other evidence of tubercle. If you find such indications, *e.g.* enlarged cervical glands, be very particular to give directions about fresh air, good milk and other nourishing diet, and order cod-liver oil and syrup of the iodide of iron.

In all cases of keratitis, or in any inflammation of the anterior part of the eye accompanied by photophobia, you must give dark glasses, or use a large shade over both eyes; glasses are much the better. Generally speaking, goggles are not good for affections of the cornea, because they so effectually box up the eyes that the air in contact with the globe gets moist and impure; domed dark glasses are preferable on this account.

Conical cornea, if advanced, has to be treated surgically. In the early stages, the curvature can be counteracted by the wearing of suitable glasses. As to its surgical treatment, you will hear further on another occasion.

[Mr. Gunn then showed a series of cases to illustrate the different corneal conditions that had been considered.]

A Medico-Literary Causerie.

MONTAIGNE ON MEDICINE AND MEDICINERS.

When Sir John Falstaff asked what the doctor said to his water, he was told that the man of art had given the oracular opinion that for the water itself it was a good healthy water, but for the party that owned it, he might have more diseases than he knew of. Whereupon Sir John is moved to the reflection, "Men of all sorts take a pride to gird at me: the brain of this foolish-compounded clay, man, is not able to invent anything that tends to laughter more than I invent or is invented on me." With much more reason than the fat knight, the doctor might say that men of all sorts take a pride to gird at him. If he does not often invent anything that tends to laughter, a great deal is invented on him. From the earliest times he has been popular as an Aunt Sally for wits of all degrees to throw at. Indeed, when one reads the ordinary gibes at physic and its professors, one is often tempted to apply Swift's famous argument against the abolition of Christianity, and to plead that medicine, even granting it to be useless for any other purpose, should still be suffered to exist, inasmuch as its removal from among the topics of human discourse would deprive numberless small wits of material for the manufacture of jokes.

The doctor has lately had a particularly bad time. Sir Edward Fry has told us that he gets a commission on the coffins for which he provides tenants, and makes the chemist, whom he helps in spoiling the Egyptians, share his unearned increment with him. M. Léon Daudet, the author of *Les Morticoles*, has had another fling at him in his recent novel, *Sébastian Gouvès*. Now comes one of his own household, Dr. W. Howship Dickinson, who, in an introductory address delivered at St. George's Hospital, after congratulating his hearers on having chosen medicine as their profession, went on to encourage them in its pursuit by repeating, and to a certain extent endorsing, the most bitter things that have been said against it. The past, he said, suggested the melancholy reflection that our ancestors would on the whole have lived longer had they had no physicians among them. This opinion he fortified by a quotation from Addison, who wrote: "We may lay it down as an axiom that when a nation abounds in physicians it grows thin of people." A modern instance of the application of this axiom is perhaps the thinning of people that is notoriously taking place in the United States, where a hundred thousand physicians go up and down, like a

certain Scriptural character, seeking whom they may devour. Again, Addison is quoted as saying: "I must confess, for the good of my native country, I could wish that there might be a suspension of physic for some years, that our kingdom, which has been so much exhausted by the wars, might have leave to recruit itself." It is surprising that among the remedies for the threatened depopulation of France, which is causing serious concern to the statesmen of that country, a close time for physic should not have suggested itself to anyone. A still surer way would be a close time for sickness!

Literature, said Dr. Dickinson, with perfect truth, abounds with sarcasms directed against the profession of medicine. Before Addison, Lesage; and before Lesage, Molière; and before Molière, Montaigne; and before Montaigne, Petrarch; and long before Petrarch, Pliny; and before Pliny, the Greek epigrammatists found an inexhaustible subject of mockery in medicine and its practitioners. The same jests are repeated from age to age in different forms. It is an example of the conservation and transformation of energy. Of the jokes about doctors it may be said:

> "All changes, naught is lost: the forms are changed,
> And that which has been is not what it was;
> Yet that which has been, is."

Montaigne gathered up all that had been said against physic by those who went before him, and added a good deal of his own. With the exception of Molière, whose attacks have more than once formed the subject of articles in THE PRACTITIONER, later writers have invented but little that tends to laughter on the doctor. We are rather by way of praising ourselves, especially at this season of the year. Criticism is always wholesome; therefore a few gleanings from *Montaigne on Medicine and its Professors* may not be without interest.

In Chapter XXXVII. of the second book of the Essays in which he professes to be treating "of the resemblance between children and fathers," the gentle reader is informed—*à propos de bottes*, as Montaigne's way is—that he had, by the liberality of years, acquainted himself with the "stone-chollike." He confesses that of all accidents incident to age, it was that he feared most. But time brought a degree of tolerance, and he "entered into covenant with this chollicall kind of life." Nevertheless, he is far from being in love with his infirmity, or calling it soft names, for he speaks of it as "the worst of all diseases, the most grievous, the most mortall, the most remediless, and the most violent." He thinks he was probably indebted to his father for "this stonie quality." The elder Montaigne

> "died exceedingly tormented with a great stone in his bladder. He never felt himself troubled with the disease, but at the age of sixtie-seven years, before which time he had never felt any likelihood or notion of it, nor in

his veins, nor in his sides, nor elsewhere; and until then had lived in very prosperous health and little subject to infirmities, and continued seven years and more with that disease training [dragging] a very dolorous lives-end."

Montaigne was born five-and-twenty years before his father's sickness, and yet inherited the disease; this sets him speculating as to the transmission of qualities and tendencies in families. His contempt for medicine was also inherited, and was doubtless aggravated by the little relief he got from such medical talent as was available in his day. He says:—

"The Antipathie which is betweene me and their arte is to me hereditarie. My father lived three score and fourteene yeares: My grandfather three score and nine: my great grandfather very neere foure score and never tasted or tooke any kinde of Physicke. And whatsoever was not in ordinary use amongst them was deemed a drug. *Physicke is grounded upon experience and examples.* So is mine opinion."

He goes on to make a challenge which it might be difficult to take up successfully, even now:

"I know not whether in all their registers they are able to finde me three more borne, bred, brought up, and deceased under one roofe in one same chimnie that by their owne direction and regiment have lived so long. Wherein they must needes grant me that if it be not reason at least it is Fortune that is on my side. Whereas among Physitions fortune is of more consequence than reason."

This family experiment of living without the aid of physic had at the time when he wrote lasted nearly two hundred years.

"Mine ancestors by some secret instinct and naturall inclination have ever loathed al maner of Physicke: for the very sight of drugs bred a kinde of horror in my father. The Lord of *Gaviac* mine unckle by the fathers side, a man of the church, sickish even from his birth, and who notwithstanding made his weake life to hold untill sixtie seaven yeares, falling once into a dangerous and vehement continuall feaver, it was by the physitions concluded, that unlesse he would aide himselfe (for they often terme that aide, which indeede is impeachment) he was but a dead man. The good soule, affrighted as he was at that horrible sentence, answered thus, Why then I am a dead man: But shortly after God made their prognostications to proove vaine. The Lord of *Bussagnet* last of the brethren (for they were foure) and by much the last, he alone submitted himselfe to that arte, as I imagine by reason of the frequence he had in other sciences; for he was a counsellor in the Court of Parliament, which prospered so ill with him, that though he were in shew of a very strong complexion, he died long before the others, except one, the Lord of Saint *Michaell*. It may well be, I have received of them that natural dyspathie unto physicke."

Montaigne, however, had a personal objection to physic of another kind, "for," he says, "I have also the consideration to refuse Phisicke by reason of the sharpeness of its taste." Nevertheless, like most enemies of medicine, he believed in simples.

"It is certaine, that amongst so many of Nature's workes, there are some things proper for the preservation of our health. I know there are some simples, which in operation are moistning and some drying. Myselfe have

found by experience, that radish rootes are windie, and senie-leaves breede looseness in the belly. I have the knowledge of divers such experiments, as I know Mutton nourisheth, that Wine warmeth me."

With some confusion between cause and effect, he says that one cause of his fear of physic was that the people most addicted to it are the sickliest :—

"Of all I know, *I see no kinde of men so soone sicke, nor so late cured, as those who are under the jurisdiction of Physicke.* Their very health is distempered and corrupted by the constraint of their prescriptions. Physitions are not contented to have the government over sicknesses, but they make Health to be sicke, lest a man should at any time escape their authority. Of a constant and perfect health, doe they not frame an argument of some future dangerous sicknesse? I have often beene sicke, and without any their helpe, I have found my sickenesses (though I never medled with the bitternes of their prescriptions) as easie to be tollerated and as short, as any man's else, and yet I have felt diverse."

He shared the opinion of Cato that nations, like individuals, thrive best without the help of doctors :—

"There is no Nation, but hath continued many ages without physicke: yea the first ages, which is as much to say, the best and most happy : and the tenth part of the world hath as yet no use of it. Infinite nations know it not; where they live both more healthie and much longer than we doe ; yea and amongst us the common sort live happily without it. The Romanes had beene sixe hundred yeares before ever they received it: by meanes or interposition of *Cato* the Censor, they banisht it their citie, who declared how easily a man might live without it, having lived himselfe foure score and five yeares and his wife untill she was extreamely old, not without physicke, but indeed without any Physition : For, *whatever is by experience found healthy for our body and health, may be termed physicke.* He entertained (as *Plutarke* saith) his familie in health, by the use (as farre as I remember) of Hares milk : As the Arcadians (saith *Plinie*) cure all with cowes milke. And the Lybians (saith *Herodotus*) doe generally maladies enjoy perfect health, by observing this custome, which is, so soone as their children are about foure yeares old, to cauterize and seare the veines of their head and temples, whereby they cut off the way to all rumes and defluxions. And the countrie-people where I dwell, use nothing against all diseases, but some of the strongest wine they can get, with store of saffron and spice in it ; and all with one like fortune."

Bacon said that doctors were like bishops, for they had the power to bind and to loose. According to Montaigne, this is the whole extent of their art. He says :—

"Of all this diversitie of rules and confusion of prescriptions, what other end or effect workes it, but to evacuate the belly? which a thousand home-simples will doe as well. And I know not whether it be as profitable (as they say) and whether our nature require the [residence] of her excrements, untill a certaine measure, as wine doth his lees for his preservation. You see often men very healthy by some strange accidents, to fall into violent vomites, and fluxies, and voyd great store of excrements, without any præcedent need, or succeeding benefite : yea with some empairing and prejudice. I learn't of *Plato* not long since, that of three motions, which belong to us, the last and worst is that of purgations, and that no man, except he be a foole, ought to undertake it ; unless it be in great extremity. The evill is troubled and stirred up by contrary oppositions. It is the forme of life, that gently must diminish, consume and

bring it to an end. Since the violent twinges of the drug and maladie are ever to our losse; since the quarrell is cleared in us, and the drug a trustlesse helpe; by its own nature an enemie to our health, and but by trouble hath no accesse in our state . . . . Cause a purgation to be prepared for your braine; it will bee better emploied unto it, then to your stomacke."

Here is a collection of stories and jokes in support of his poor opinion of doctors:—

"A Lacedemonian being asked, what had made him live so long in health, answered, *The ignorance of physicke.* And *Adrian* the Emperour, as he was dying, ceased not to crie out, that *the number of Pnysitions had killed him.* A bad wrestler became a Physition. Courage, said *Diogenes* to him, *thou hast reason to doe so, for now shalt thou helpe to put them into the ground, who have heeretofore ayded to lay thee on it.* But according to *Nicocles* they have this happe, *That the Sunne doth manifest their successe, and the earth doth cover their fault.* And besides they have a very advantageous fashion among themselves, to make use of all manner of events; for, whatsoever either Fortune or Nature, or any other strange cause (whereof the number is infinite) produceth in us, or good or healthfull, it is the priviledge of Physicke to ascribe it unto herselfe. All the fortunate successes that come to the patient, which is under their government, it is from nature he hath them. The occasions that have cured me, and which heale a thousand others, who never send or call for Physitions to helpe them, they usurpe them in their subjects. And touching ill accidents, either they utterly disavow them, in imputing the blame of them to the patient, by some vaine reasons, whereof they never misse to find a great number; as he laye with his armes out of the bed, he hath heard the noyes of a coach. . . . . His Window was left open all night. Hee hath laine upon the left side, or troubled his head with some heavie thought. In some, a word, a dreame, or a looke, is of them deemed a sufficient excuse, to free themselves from all imputation: Or if they please, they will also make use of this emparing, and thereby make up their businesse, and as a meane which can never faile them, when by their applications the disease is growne desperate, to pay us with the assurance, that if their remedies had not beene, it would have beene much worse. He, whom but from a cold they have brought to a quotidian Ague, without them should have had a continuall feaver. *They must needes thrive in their businesse, since all ills redound to their profit.* Truly they have reason to require of the pacient an application of favourable confidence in them: which must necessarily be in good earnest, and yeelding to apply it self unto imaginations, overhardly to be believed. *Plato* said very well and to the purpose, that *freely to lie belonged onely to Physitions*, since our health dependeth on their vanitie and falsehood of promises. *Æsope*, an author of exceeding rare excellence, and whose graces few discover, is very pleasant in representing this kinde of tyrannicall authority unto us, which they usurpe upon poore soules, weakened by sickenes, and overwhelmed through feare: for he reporteth, how a sicke man being demaunded by his Physition, what operation he felt by the Physicke he had given him. I have sweate much, answered he; that is goode, replied the Physition. Another time he asked him againe how he had done since: I have had a great cold and quivered much, said he: That is very well, quoth the Physition againe. The third time he demaunded of him, how he felt himselfe: he answered, I swell and puffe up as it were with the dropsie: That's not amisse, said the Physition. A familiar friend of his comming afterward to visite him, and to know how hee did? Verily (said he) my friend I die with being too well. There was a more equall Law in *Egypt*, by which for the first three dayes the Physition took the patient in hand, upon the patients peril and fortune; but the three dayes expired, it was at his owne. . . . . A Physition boasted

unto *Nicocles*, that his Arte was of exceeding great authority. It is true (quoth *Nicocles*) for, it may kill so many people without feare of punish ment by Law. As for the rest, had I beene of their Counsell, I would surely have made my discipline more sacred and mysterious. They had begunne very well, but the end hath not answered the beginning. It was a good ground, to have made Gods and Dæmons Authors of their Science, to have assumed a peculiar language and writing to themselves. Howbeit philosophy supposeth it to be folly to perswade a man to his profit, by wages not understood: *Ut si quis medicus imperet ut sumat: As if a Physition should bid a man take*

Terrigenam, herbigradam, domiportam, sanguine cassam.—Cic. Divin. ii.
One earth-borne, goe-by-grasse, house-bearing, slimie, bloodlesse.

It was a good rule in their arte, and which accompanieth all fanaticall, vaine, and supernaturall artes, that *the patients beliefe must by good hope and assurance preoccupate their effect and operation.* Which rule they hold so farre forth, that the most ignorant and bungling horse-leach is fitter for a man that hath confidence in him, than the skillfullest and learnedest Physition."

He has a thrust at the pharmacopœias of his day, which largely consisted of animal extracts:

"The very choyce of most of their Drugges, is somewhat mysterious and divine. *The left foote of a Tortoyze: The stale of a Lizard; The dongue of an Elephant; The liver of a Mole, Blood drawne from under the right wing of a white Pigeon;* And for us who are troubled with the stoue-cholike (so disdainfully abuse they our misery) *some Rattes pounded to small powder;* and such other foolish trash, which rather seeme to be magike-spells or charmes, than effects of any solide science. I omit to speake of *The odde number of their pilles; The destination of certaine dayes and feastes of the yeare; The distinction of houres to gather the simples of their ingredients; And the same rewbarbative and severely-grave looke of theirs, and of their port and countenance;* Which *Plinie* himselfe mocketh at."

Doctors, he says, show the greatest distrust of each other's skill:

"But, as I was about to say, they have failed, forsomuch as they have not added this to their faire beginning, to make their assemblies more religious, and their consultations more secret. No profane man should have accesse unto them, no more than to the secret ceremonies of *Æsculapius.* By which meanes it cometh to passe, that their irresolution, the weaknesse of their arguments, divinations and grounds, the sharpenesse of their contestations full of hatred, of jealousie and particular considerations, being apparent to all men; a man must needes be starke blinde, if he who falleth into their hands, see not himselfe greatly endangered. *Who ever saw Physition use his fellowes receipt, without diminishing or adding somewhat unto it?* Whereby they greatly betraie their arte; and make us perceive, they rather respect their reputation, and consequently their profit, than the wellfare or interests of their patients. He is the wisest amongst their Doctors, who hath long since prescribed them that one alone should meddle to cure a sicke man; for, if it prosper not with him, and he do no good, the reproach will not be great to the arte of physicke, through the fault of one man alone; and on the other side, if it thrive well with him, the Glorie shall be the greater. Whereas if they be many, every hand-while they discover their mysterie, because *They oftner happen to doe ill than well.*"

The patient is always in danger of suffering damage from the drugs themselves, or from errors in confounding them:

"If we could but be assured, when they mistake themselves, their physick would do us no harme, although not profit us, *It were a reasonable composition, for a man to hazard himselfe to get some good, so he endangered not himselfe to lose by it. Æsope* reporteth this storie; that one who had bought a Moore-slave, supposing his black hew had come unto him by some strange accident, or ill usage of his former master, with great diligence caused him to be medicined with divers bathes and sundry potions. It fortuned the Moore did no whit mend or change his swarthy complexion, but lost his former health. *How often commeth it to passe, and how many times see we physitions charge one another with their patients death.* I remember a popular sicknesse, which some yeares since, greatly troubled the townes about mee, very mortall and dangerous; the rage whereof being over-past, which had carried away an infinite number of persons: One of the most famous physitions in all the country, published a booke, concerning that disease wherein he adviseth himselfe, that they had done amisse to use phlebotomy and confesseth, it had beene one of the principall causes of so great an inconvenience. Moreover, their authors hold, that *there is no kinde of Physicke, but hath some hurtfull part in it.* And if those that fit our turne, doe in some sort harme us, what must, those doe, which are given us to no purpose, and out of season? As for me, if nothing else belonged thereunto, I deeme it a matter very dangerous, and of great prejudice for him who loathes the taste or abhorres the smell of a potion, to swallow it at so unconvenient houres, and so much against his heart. And I thinke it much distempereth a sicke man, namely in a season he hath so much neede of rest. Besides, consider but the occasions on which they ordinarily ground the cause of our sickenesses; they are so light and delicate, as thence I argue, *that a very small error in compounding of their Drugges, may occasion us much detriment.* Now if the mistaking in a Physition be dangerous, it is very ill for us: for it is hard if he fall not often into it."

We are told of a certain village in a remote valley where the people long lived happily till they were persuaded to allow a lawyer to come among them. But a worse evil was to follow:

"After this corruption or intrusion of law (they say) there ensued presently another mischiefe of worse consequence, by meanes of a Quacke-salver, or Empirike Physition that dwelt amongst them, who would needes be married to one of their daughters, and so endenizon and settle himselfe amongst them.

"This gallant began first to teach and instruct them in the names of agewes, rheumes and impostumes; then the scituation of the heart, of the liver and other intrailes: A science untill then never known or heard of among them. And in stead of garlike, wherewith they had learned to expell, and were wont to cure all diseases, of what qualitie and how dangerous soever they were, he induced and inured them, were it but for a cough or cold, to take strange compositions and potions: And thus beganne to trafficke not only their health, but also their deaths. They sweare, that even from that time they have apparantly perceived, that the evening sereine or night-calm bred the head-ach and blasted them; that to drinke being hot or in a sweat empaired their healths; that Autumne windes were more unwholesome and dangerous, then those of the spring-time: And that since his slibber-sawces, potions and physicke came first in use; they find themselves molested and distempered with Legions of unaccustomed maladies and unknowne diseases; and plainly feele and sensibly perceive a generall weakenesse and declination in their antient vigor; and that their lives are nothing so long, as before they were."

Yet Montaigne honoured the doctor, not for the need he had

of him, but for his conversation. The late Sir Henry Holland would apparently have fulfilled his ideal of a physician:

"As for me I honour Physitions, not according to the common-receiv'd rule, for necessitie sake (for to this passage of the Prophets may be aleaged who reprooved King Asa, because he had recourse unto Physitions) but rather for love I beare unto themselves; having seene some, and knowne diverse honest men amongst them, and worthy all love and esteeme. *It is not them I blame, but their Arte;* yet do I not greatly condemne them for seeking to profit by our foolishnesse (for most men do so) and it is a thing common to all worldlings. *Diverse professions and many vocations, both more and lesse worthie than theirs, subsist and are grounded onely upon publike abuses and popular errours.* I send for them when I am sicke, for they may conveniently be found: and love to be entertained by them, rewarding them as other men doe. I give them authority to enjoyne me to keepe myselfe warme, if I love it better so than otherwise. They may chuse, be it either leekes or lettuce, what my broth shall be made withall, and appoint me either white or claret to drink: and so of other things else, indifferent to my taste, humour or custome. I know well it is nothing to them, forsomuch as *Sharpenesse and Strangeness are accidents of physickes proper essence. Lycurgus* allowed and appoynted the sicke men of *Sparta* to drinke wine. Why did he so? Because being in health, they hated the use of it. Even as a Gentleman who dwelleth not farre from me, useth wine as a soveraigne remedie against agews, because being in perfect health, he hateth the taste thereof as death. How many of them see we to be of my humour? That is, to disdaine all Physicke for their owne behoofe, and live a kinde of formall free life, and altogether contrary to that, which they prescribe to others? And what is that, but a manifest abusing of our simplicitie? For, they hold their life as deare, and esteeeme their health as pretious as wee do ours, and would apply their effects to their skill, if themselves knew not the uncertainty and falsehood of it."

Montaigne agreed with Plato that a doctor should gain experience by suffering in his own person the diseases and injuries which he has to treat:

"Yet doth Physicke make open profession alwayes to have experience for the touchstone of her operation. And *Plato* had reason to say, that *to be a good Physition, it were requisite, that he who should undertake that profession, had past through all such diseases as hee will adventure to cure, and knowne or felt all the accidents and circumstances he is to judge of.* It is reason, themselves should first have the pox, if they will know how to cure them in others. I should surely trust such a one better then any else. Others but guide us, as one who sitting in his chaire paints seas, rockes shelves and havens upon a board, and makes the modell of a tall ship to saile in all safety: But put him to it in earnest he knows not what to doe, nor where to begin."

Finally he exclaims:

"Oh God, that Physicke would one day afford me some good and perceptible helpe, how earnestly would I exclaime:

'*Tandem efficaci do manus scientiæ.*'"

Had Montaigne lived at the present day he might have thought better of physic, for his calculous disorder would probably have yielded to the resources of modern art. At any rate, he would doubtless have agreed with Dr. Dickinson that "medicine has become a comparatively harmless occupation."

Public Health.

THE DEGREE OF INFECTIVITY OF ENTERIC FEVER.

In the last number of The Practitioner we discussed some of the means of spread of enteric fever, dwelling upon the subject particularly in relation to effluvia from sewers and drains, and to vital processes connected with the life history of the *bacillus typhosus* occurring in the soil.

No review of this subject would, however, be complete which did not lay special stress upon personal infection as a most important means of spreading this disease. It appears to us especially opportune at the present moment to draw attention to this aspect of the question, because we are now suffering very seriously from the natural consequences of the medical teaching of the present generation of medical practitioners. Nothing is more common than to hear the statement: "There is no reason to be apprehensive of danger in nursing this case; you have only to take care to disinfect the stools, and no risk is incurred." The result of such teaching as this is that the necessity for the extreme precautions which are required to prevent the occurrence of secondary attacks among the attendants upon the typhoid sick is almost entirely ignored; a feeling of false security arises, from which in a very large number of home-nursed cases, and in a smaller number of hospital-nursed cases, there is a rude awakening.

The experience of the writer is that when enteric fever patients are treated in the homes of the poorer classes it is rather the rule than the exception to have second, and even third, cases in the same house. Of course, in some of these instances the second case may have been caused by the operation of the source of infection originating the first case. But in a large number of these first cases the source of infection has been demonstrably outside the home, and yet the attendants suffer the consequences of their attempts at amateur nursing. The only conclusion possible, in face of the facts with which every experienced medical officer of health is familiar, is that it is most dangerous for those who cannot afford skilled nursing to treat cases of enteric fever under domestic conditions.

We next come to the question as to whether cases of enteric fever ought to be treated in general hospitals, alongside of other cases of non-infectious diseases. From the view point of the medical student, it would be a serious calamity for educational purposes were such cases to be withdrawn from general and transferred to special fever hospitals. There is, however, the alternative that they might be treated, in sufficient numbers for educational purposes, in particular wards of the general hospital devoted to this disease; and we have no hesitation in strongly recommending this plan for general adoption. It is quite true that the accidents due to treating enteric fever cases among other non-infectious patients are but few, but the experience of the writer is that they are by no means a negligible quantity. There is danger, first, to the other patients, and, secondly, to the nursing staff. Cases are not unknown where patients in the next bed

to a typhoid patient have acquired the infection. How this arises is dubious. There may have been an accidental interchange of bedpans or urinals, though elaborate precautions against this accident are taken in all well-regulated hospitals. It is more likely that staining of bed or body linen by fluid or solid excreta has occurred, and that the desiccated matter derived from such excreta has obtained access to the milk or other food of the next patient. But, whatever the exact means by which the result is secured, the fact remains; and such accidents are particularly apt to occur during the stress of overwork, when the staff cannot take the same care as in times of comparative leisure. We shall shortly see that there is a further danger connected with the use of water-closets in common by convalescents from enteric fever and from other diseases.

It is well known that in a small proportion of cases nurses acquire the infection of enteric fever. When one remembers the detailed duties of a nurse, the wonder is that the disease is not oftener acquired than at present by the nurse in the discharge of these duties. Apart from the cases of involuntary passage of urine and fæces in bed, the cleansing of urinals and bedpans and the washing of patients involve possible finger contact with infective material, which only the most careful cleanliness can deprive of its danger.

At this point it may be convenient to discuss the dictum of Murchison that "all evidence is in favour of the view that the *fresh* evacuations are harmless, and that the poison is developed during their putrefaction." The evidence referred to by him is the experience of the London Fever Hospital, in which, during the twenty-three years 1848-70, 5,988 cases of enteric fever were admitted to the hospital, and only seventeen residents in the hospital contracted the disease, most of these having had no personal communication with patients sick of enteric fever. On the other hand are mentioned (Murchison, 3rd edition, p. 463) nineteen cases published by Dr. Collie, of the Homerton Fever Hospital, in which he attributed the infection to direct contagion from the fresh stools; but it is added, "This is so contrary to the experience of other hospitals that it is impossible not to suspect the existence of some other cause."

Possibly the view that the poison of enteric fever is developed during the putrefaction of the excreta may be reconciled for practical purposes with the view now probably more generally accepted that the excreta are infective as soon as evacuated by the more modern conception as to the means of conveyance of infection. We now lay less stress on the importance of gaseous emanations from the excreta, knowing that the contagion of enteric fever, as of other infectious diseases, is particulate in nature, that it cannot evaporate or escape from a liquid surface except by splashing, and that if *immediate* infection of the nurse is to occur there must be direct conveyance of infective matter to the mouth of the latter, an event which is happily rare. Later on (when, under the older view, the infectivity arising from putrefaction occurs) time for drying of accidentally spilt excreta or of stains on linen has elapsed, and the nurse is then exposed to the more subtle yet greater danger arising in this connection.

The question arises whether nurses in fever hospitals or nurses in general hospitals are more likely to acquire the infection of enteric fever. We are not aware that any statistics exist on this point. If such statistics were available, it is not likely that they would have been compiled under

conditions rendering them strictly comparable. Our impression, however, derived from considerable experience in connection with both fever hospitals and general hospitals, is that cases of enteric fever among nurses are more frequent in the latter than in the former. Nor is this surprising. Let us imagine a ward of sixteen patients of whom four are suffering from enteric fever, the remainder from other non-infectious acute complaints. The nurse is hard worked, and has to help in succession a large number of bedridden patients. Is it surprising that the standard of precautions taken by her is apt to be that of the general, and not of the infectious, patient? In a fever hospital, on the contrary, there is no such variation of the standard of necessary precautions, and the nurse is not likely to forget the necessity for extreme cleanliness in every particular.

The possibilities of infectivity of enteric fever are considerably greater than has hitherto been supposed, in view of the fact that the urine of enteric patients usually contains the typhoid bacillus. On this point the researches of Drs. Wright and Semple, of Netley, may be referred to. They found (*Lancet*, July 27th, 1895) that in six out of seven cases of enteric fever in which they examined the urine typhoid bacilli were present in it. In contrast with this, we must remember that typhoid bacilli are found much less frequently in the fæces. The earlier statement, that it was always present in typhoid stools, was owing to confusion with the bacillus coli. Wathelet found the true typhoid bacilli in the stools of only four out of the twelve cases of enteric fever studied by him, and in these four patients they were detected only four times in a total of twenty-four examinations. In the other eight cases the typhoid bacillus could not be detected in the stools throughout the whole course of the disease. If these facts are correct (negative evidence is sometimes misleading), it is clear that we have been wrong in laying chief stress on the proper methods of treatment of the stools of typhoid patients. This we ought to continue to do, but we must attend with the greatest care to the still more important disinfection of the urine.

It is only fair to add that other observers have not found the typhoid bacillus present in the urine in such a preponderant number of cases. Thus, M. W. Richardson (*Journal of Experimental Medicine*, Vol. IV., No. 1, 1899) examined 190 samples of urine from sixty-six patients at the stage of early convalescence from enteric fever. Of these, only fourteen showed the presence of the typhoid bacillus in the urine. The same investigator had previously found the typhoid bacillus in the urine of patients during the more acute stage of the disease in only nine out of thirty-eight cases examined. But even these proportions indicate the desirability of regarding the urine as infective in all cases of enteric fever.

The frequent infectivity of the urine in enteric fever appears to call for some reconsideration of the views ordinarily held as to the pathology of enteric fever. The ordinary notion is that enteric fever is a local infection of the walls of the small intestine, and that the constant presence of the typhoid bacillus in the mesenteric glands and the spleen, and their less constant presence in the circulation and in the urine, represent leakages from the site of local infection. According to this view the disease is analogous to diphtheria, in which, although the Klebs-Loeffler bacillus is usually absent from the circulation, a similar leakage occasionally occurs.

t is quite conceivable, however, that the symptoms of enteric fever are not caused by an "intoxication process," as in diphtheria or cholera, but that there is an actual and invariable invasion of the circulation by the typhoid bacilli, which causes the intestinal lesion by an analogous process to that causing the pustules of small-pox. The latter view—that enteric fever is a septicæmic disease—is favoured by the turgidity of the spleen, which is known to occur in all septicæmic processes. The rose spots on the skin favour the same view. Neufeld has recently found the typhoid bacillus in these rose spots in thirteen out of fourteen patients examined by him. Special precautions were taken to avoid fallacies in connection with these experiments (*Zeitschrift für Hygiene*, Vol. XXX., No. 3, 1899).

On the whole, we must agree that enteric fever is frequently, if not always, a septicæmic disease, and that its range of infectivity is greater than is usually supposed. Most of the earlier results, tending towards the opposite conclusion, were obtained before the technique of the cultural methods by which the typhoid bacillus can be distinguished from the different varieties of *bacillus coli communis* were thoroughly understood.

The duration of infection in enteric fever is another important point. Convalescence is protracted in this disease, and it may appear, therefore, that such a question as this does not arise in practical life. This is far from being the case. If the patient has been treated at home, how soon, for instance, may others use with safety the water-closet down which the patient's excreta are discharged? If every possible precaution is taken, they might theoretically use the same water-closet throughout the patient's illness. But in practice this has been found not to be safe, and the careful doctor will decline to treat a patient unless for the disposal of his excreta the monopoly of a water-closet in a town house, or other special arrangement where there are no water-closets, is secured. How soon, then, may these precautions be withdrawn? The writer has known the case of an enteric fever patient who, after a month's convalescence, was taken to a seaside boarding-house kept by a friend, and while there she used a water-closet used by this friend and no other. Within three weeks of her arrival this friend was taken ill with enteric fever. No other cases occurred in the house, the drainage and all arrangements in connection with it being perfect. Although such evidence is not conclusive, it suggests the protracted infectivity of the urine of the first patient, and the conveyance of the infection from this source to the second patient. Numerous cases might be cited in which a patient discharged when perfectly well from a hospital in which he has been treated for a protracted attack of enteric fever, has, on reaching his home in the country, in which there are defective privy arrangements, set on foot a serious epidemic of enteric fever. The significance of such cases may be emphasised by the following extreme instance. In the paper already quoted (M. W. Richardson, *ante*), a case is mentioned of a man who five years previously had an attack of enteric fever, since when he had suffered from trouble with his urine. He was admitted to the John Hopkins Hospital at the end of this time with cystitis, and from his urine on examination a pure culture of *bacillus typhosus* was obtained. It has been observed during attacks of enteric fever that the urine may contain typhoid bacilli in such numbers as to render it turbid when freshly passed; and, although the case last quoted is an extreme one, there appears to be little doubt that these bacilli

may continue to be excreted by the urine some weeks, or even months, after an attack of enteric fever. It has been shown that urotropin administered by the mouth renders urine containing the *bacillus coli* sterile. This renders it hopeful that it may similarly act efficiently as a urinary disinfectant after enteric fever. The bacteriological examination of mucus from the throats of diphtheria convalescent patients is now commonly practised, patients only being discharged to their homes, or allowed to mix freely with others, when a negative result is obtained from this examination. It may ere long be considered desirable to adopt a similar examination of the urine of convalescent enteric patients before considering them free from infection. The desirability of such an examination is particularly indicated where patients are likely to go to houses in which the closets and other sanitary arrangements are in an unsatisfactory condition.

It is generally accepted that the sole methods of infection in enteric fever are by means of the solid and liquid excreta. There have, so far as we know, been no cases in which infection has been ascribed to the vomit of enteric patients. It is possible, however, that the expectoration may in certain cases be infectious. The most striking instances of this with which we are acquainted are the five cases given by Dr. Watson Williams (*Brit. Med. Journ.*, December 15th, 1894). A patient was admitted to the Bristol Hospital with a malignant attack of enteric fever. This presented symptoms of laryngeal and bronchial catarrh, and the patient was constantly coughing and expectorating about the bed. The next two cases were of brothers of the first patient, who had apparently acquired the disease from him before his admission to hospital. The fourth was a nurse in attendance on the first patient; the fifth patient, at the time of the admission of the first, was under treatment for aneurism, and it is surmised that he acquired enteric fever from the first patient, who was in a neighbouring bed. This fifth patient was found to have *post mortem* superficial laryngeal ulcers. Dr. Williams regarded these as specific ulcers of enteric fever analogous to the intestinal ulcers, and considered that the fifth patient, and probably also the nurse, acquired the disease by inhaling the desiccated expectoration from the first patient, who, judging by his symptoms, may be surmised to have also had laryngeal ulcers. These cases are most interesting. The typhoid bacillus appears to have been isolated from the laryngeal ulcer, but whether the isolation would have fulfilled the cultural requirements of more modern bacteriology we cannot say. A further point is raised by the late Professor Kanthack's statement that at the usual situation of these laryngeal ulcers (tips and edges of the epiglottis and neighbourhood of the vocal processes) no adenoid tissue exists, and that therefore the ulcers could not be truly typhogenetic in character. This point must be regarded as an open one; but it is possible that, even if the ulcers of the larynx are not true typhoid ulcers, the expectoration of a typhoid patient may be truly infective. Further observations on this point are required.

A Review of the Medical Sciences.

MIDWIFERY.

By W. E. FOTHERGILL, M.A., B.Sc., M.D.,

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"Our cord surgery is prehistoric. It is not a little curious that the earliest operation in the world, and the only one done upon every individual, should be treated by measures that antedate our annals—namely, ligation and aseptic absorbent dressings." This is the opening sentence of a paper by Dr. R. L. Dickinson, entitled "**Is a Sloughing Process at the Child's Navel consistent with Asepsis in Childbed?**" which appears in the July number of the *American Journal of Obstetrics*. The object of this paper is to advocate "primary complete amputation" of the cord. The author advises that, instead of tying the cord and allowing the stump to dry up and drop off, we should cut off the cord at the skin margin immediately after birth, stop the bleeding by ligature of the vessels, by stitches or by pressure, and so attempt to secure healing at the umbilicus by first intention. "That form of operation should be chosen which will do away with sloughing or pus production. Removal alone is prevention. The obstetric nurse will then no longer go from a pus dressing on the baby's abdomen to the fissured nipple, the perineal wound, the catheter, or, in small maternities, to the vulva of the woman in labour. And, conversely, septic maternal discharges will cease to endanger the child's open wound. To frankly sever the cord at the skin margin, with ligature of the vessels or suture, one or both, brings about safe, clean, prompt healing. Even the pressure of a pad and an adhesive strap may suffice. Thereby the navel of the second day looks like the navel of the tenth or fifteenth day under other methods."

It is not probable that this method of dealing with the umbilical cord will become general; however, the paper contains a valuable account of the pathology of the umbilicus, and a very interesting history of the various ways of treating the cord which have been employed by different peoples during all ages whose records we possess. To show the need for results better than those obtained by the usual methods, the author finds, after study of the literature, that the mortality of new-born children from navel infection is fully one per cent., while "the ratio of septic deaths to early deaths from all causes varies between fifteen and forty per cent." After a description of the anatomy and histology of the cord, our author discusses the process of separation and its pathology. Arteritis umbilicalis, phlebitis, omphalitis, and other conditions are distinguished; but it may be stated that practically all troubles referred to are due to septic infection occurring either before or after the separation of the cord.

Dr. Dickinson next takes up the subject of treatment, and describes the various ways of dressing the cord which have been employed in the

past and are now in use. Many ancient peoples and savage tribes have dispensed with the ligature altogether, and several modern writers maintain that it is quite unnecessary to tie the cord. This is, of course, true in most cases. "After ten to fifteen minutes, the blood pressure in the cord sinks, and, even without a ligature, no serious hæmorrhage can take place." Recently some authorities have advised the use of elastic ligatures as being unlikely to slip. Many ancients and moderns have practised "stripping" the cord before tying it, so getting rid of some of the Wharton's jelly, and giving the ligature a firmer hold. Some use clamps instead of tying, others have cauterised the cut end of the cord. There is considerable diversity of opinion as to where a ligature should be placed, some preferring to leave as short a stump as possible, and others going to the other extreme. Many authorities tie only one ligature ; indeed, the second one usually employed serves no purpose unless there be a second child within the uterus.

The dressings that have been and still are used for the cord are innumerable. Of course, no dressing is necessary ; the lower animals use none, nor do they apply a ligature. A return to nature is urged by those writers who hold that the stump of the cord shrivels and separates best when freely exposed to the air. Some authors advise moist dressings, others use alcohol, others again prefer glycerine. Greasy applications also have their supporters — lard, oil, butter, and various ointments. Powders are the favourite dressings of many—charcoal, starch, iodoform, boric acid, talc, and so on. Many writers urge the use of cotton or gauze as coverings for the above substances, and mention their advantages over the familiar linen rag. Some prefer that the dressing should remain unchanged till the cord separates, others would have it changed daily or oftener than the day. A permanent air-excluding dressing of plaster of Paris has found some advocates, and a free application of powdered clay twice daily is also advised. The reader is driven to the conclusion that it would be difficult indeed to find an unsuccessful method of dealing with the umbilical cord.

Our author remarks that "when Listerism became popular the umbilical wound was probably the last to receive the benefit of the teaching." Since then, however, every possible antiseptic has been recommended for dressing the cord. There was, indeed, a craze for antiseptic washes and powders. In 1888, however, some writers were condemning the application of antiseptics to the cord as useless and irritating, and were urging the application of sterilised dressings with all the formalities observed at a surgical operation under the aseptic *régime*. Dr. Dickinson's paper concludes with a complete bibliography of the subject, which occupies no less than five pages, and which is invaluable to those interested in the subject. He has honoured me by mentioning my opinions, but has done so in a slightly misleading manner ; for he remarks (p. 41), "Fothergill advises dressing with wet antiseptic dressings" ; and again (p. 47), "Some recent writers still teach routine antisepsis (Fothergill, Dakin)." In self-defence I must say that I never taught or employed anything beyond common cleanliness. The only words I ever wrote on the subject are as follows: "When the cord has been tied, cut, and dressed with care, it should give no further trouble. A line of demarcation forms soon after the placental circulation ceases, and at this line the shrivelled two inches of cord separates in the course of a week, leaving a small sore which soon becomes

covered with skin. Neglect of cleanliness may lead to *inflammation* and *septic absorption* from the raw surface, *which should be treated by wet antiseptic dressings.*" (See "Manual of Midwifery," 1896, p. 466.) I generally let the nurse tie the cord with any clean piece of thread, tape, or string she may have provided ; I see that she uses clean scissors in cutting it, and I tell her to use a fresh piece of clean rag for dressing it every day after washing the baby. Once or twice only have I seen any suppuration at the navel, and have then ordered a wet antiseptic dressing, under which the umbilical sore has rapidly cleaned itself and healed. The formidable and fatal conditions described in the literature of the subject I have never seen, and at present wish for no better dressing for the cord than the familiar and traditional scrap of clean rag with a hole burnt in the middle.

Several authors have recently advised that the new-born child **should not be washed at all.** Some allow one bath to begin with, and then no more until after the healing of the navel is complete. The observations of several observers have led them to conclude that, in Germany at least, new-born children get on better when their daily ablutions are omitted. Zweifel suggested twenty years ago that the well-known *icterus neonatorum* is a result of too energetic washing during the first few days of life. Gessner, apparently borrowing the idea, went farther, and attributed almost all the ailments of the new-born to the same "aimless proceeding," as he calls it. Fuchs discussed the subject and recorded some experiments in the *Münchener med. Wochsch.* of May 23, 1899 ; and Dr. Ernst Schönewald continues the discussion in the number of the same journal published on July 11. He says that if Gessner had taken the trouble to make any experiments, he could easily have refuted the statement that the yellow discoloration of the new-born is due to washing. Schönewald had a series of infants treated, some with and some without washing. One would be washed and dressed in the usual way ; the next born, after careful dressing of the cord, would be enveloped in flannel without washing. So they went on, washed and unwashed turn about, until 41 infants had been observed. Of the 21 unwashed, 16 turned yellow—namely, 76 per cent. ; while of the 20 washed children, 14 turned yellow—namely, 70 per cent. Adding these results to those of Fuchs, 36 out of 53 uncleaned infants developed icterus, while 25 out of 37 did so under the more usual and cleanly *régime.* Thus about 67 per cent. of children turn yellow, washed and unwashed alike. It is therefore obvious that washing is not the cause of icterus, nor does Schönewald think that it can be said to account for any of the other troubles of early existence.

A useful clinical lecture on **Post-partum Hæmorrhage,** by Dr. Robert Jardine, is published in the *Scottish Medical and Surgical Journal* for September. The author emphasises a point often overlooked—namely, the distinction between contraction and retraction of the uterine muscle. "If you place your hand on the abdomen, in an ordinary case, during or after the third stage, you will feel the uterus harden under a pain ; but in a short time you will distinctly feel it soften under your hand when the pain has passed off. In an ordinary case, no bleeding will occur during the relaxed condition. This is due to the *retraction* of the muscle fibres closing the vessels, and also to the blood clotting in the mouths of them. In the vast majority of cases hæmorrhage is due to a want of contraction,

and especially of retraction of the uterine muscle fibres." A uterine contraction during or after labour is not followed by complete relaxation, but a certain portion of the contraction remains permanent—namely, the

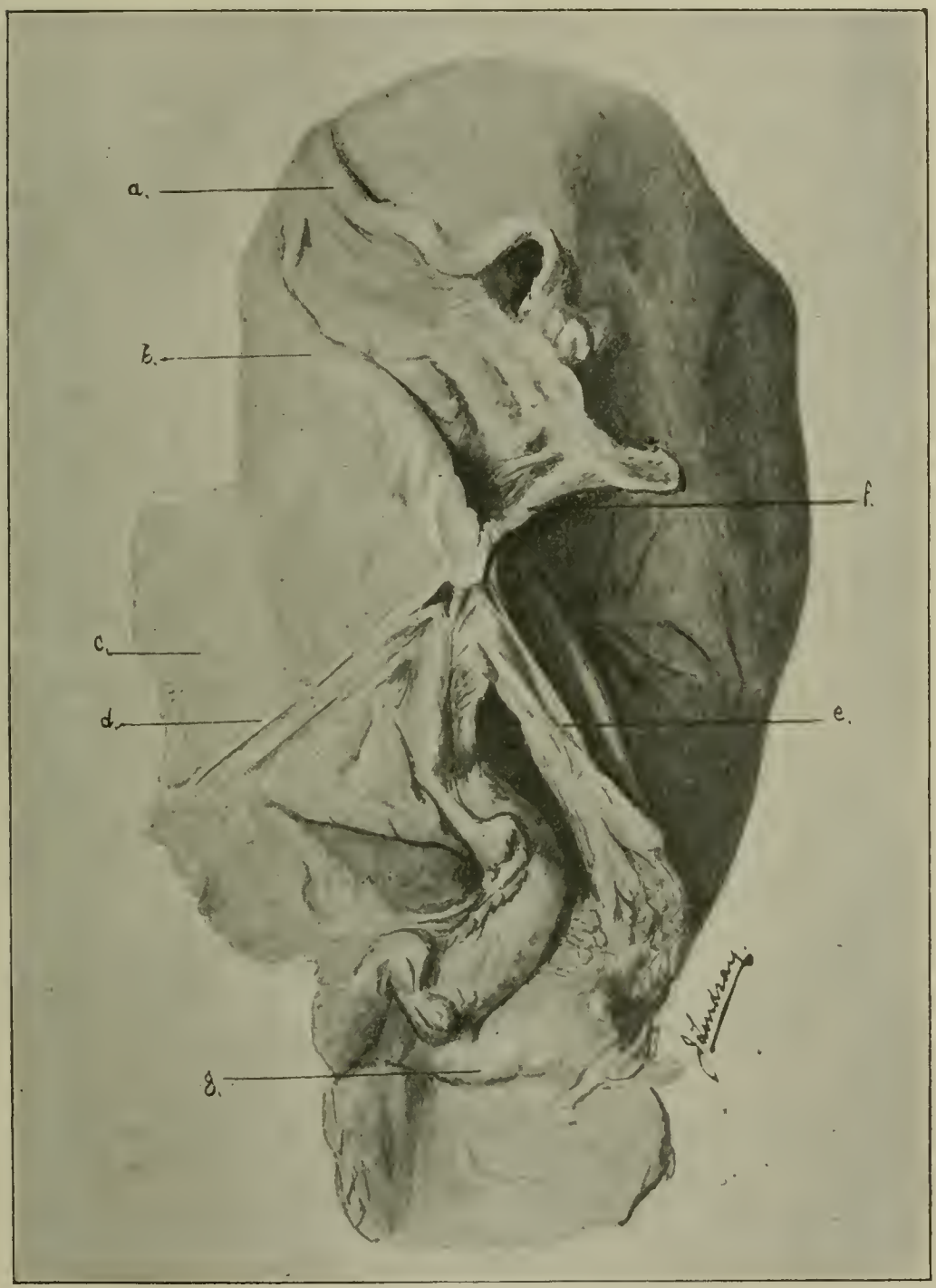


Fig. 1.—Dr. Jardine's Tear of the Uterus.

a, Fallopian tube; *b*, Round ligament; *c*, Bladder; *d*, Anterior layer of broad ligament; *e*, Posterior layer of broad ligament; *f*, United layers of broad ligament; *g*, Os externum.

retraction. Thus as pain follows pain, relaxation always being incomplete, the cubic content of the active portion of the uterus is gradually reduced, a portion of the effect of every contraction being retained in the form of retraction.

Dr. Jardine points out that bleeding during the third stage of labour is caused, as a rule, by partial separation of the placenta; and he rightly urges that, when it occurs, the after-birth should at once be removed by expression, or, that failing, by passing the hand into the uterus. In treating true *post-partum* hæmorrhage, the author favours the use of the hot intra-uterine douche (120° F.). He condemns the application of perchloride of iron, much preferring to plug the uterus with long strips of clean material—iodoform gauze for choice. He mentions three cases in which plugging was successful; copious subcutaneous injections of saline fluid being used in two of them to make up for the deficiency of fluid in the vessels. Dr. Jardine prefers subcutaneous injection to infusion of saline fluid into the rectum or directly into a vein.

Bleeding due to tears of the cervix, vagina, perineum, or vulva, is next discussed, and a warning is given against the application of the forceps before dilatation is complete, this being a frequent cause of tearing of the cervix. Delivery of the after-coming head through an incompletely dilated cervix is also very apt to cause tearing, unless great care is used. The uterus figured (Fig. 1) was from a case of placenta prævia in which the after-coming head was dragged through the undilated cervix. A tear is seen extending from the cervix up into the body of the uterus. Dr. Jardine mentions that the worst tears of the perineum and vagina often occur in cases in which the forceps have not been used at all. Immediate stitching is the proper treatment for traumatic hæmorrhage. If this cannot be done, plugging should be adopted in its stead. In a tear like that figured neither would suffice. "The only hope of saving the woman is to open into the lateral fornix and tie the uterine artery; and if that does not suffice, extirpate the uterus completely." A continuous catgut suture is recommended for tears of the vagina, perineum and vulva. "It is no disgrace to tear a perineum, but it is a disgrace not to stitch it when torn." "Silkworm-gut makes the best deep sutures, but catgut, which will not be absorbed for six or eight days, does exceedingly well, and has the advantage of not requiring removal."

Secondary *post-partum* hæmorrhage may occur at any time during the puerperium. It is nearly always due to the retention in the uterus of a piece of membrane or placenta, a clot or a polypus. The uterus must be cleaned out with care, for which purpose the use of an anæsthetic is often needful.

Hæmorrhage into the pelvic tissues may occur during pregnancy, and also during or shortly after labour. The veins in the broad ligaments, vagina, and vulva are often varicose, and injury to any of them results in hæmatoma. Judging from observations made at Cæsarean sections, Dr. Jardine concludes that varicosity of the veins in the broad ligaments is extremely common. The pressure of the surrounding tissues generally prevents hæmorrhage of this kind from being excessive, though it may be severe enough to cause collapse of the patient. A fluctuating swelling in the pelvis may be detected by careful examination. If the blood approaches the surface, the skin becomes black, and it is usually this which calls attention to the condition. Hæmatoma is not often serious unless the extravasated blood becomes septic, and even then prompt evacuation of the clot and free drainage should save the patient. In one case the author found a large semi-fluctuant tumour bulging inwards the right side of the

vagina. Next day the right side of the vulva and the right buttock were black. The clot remained aseptic, and in three weeks it was nearly absorbed.

Writing in the *Münchener medicinische Wochenschrift*, Nov. 28, 1898, on "**Infusion and its Value in Medical Practice,**" Dr. Georgii considers it very remarkable that, while the subcutaneous injection of salt water after hæmorrhage has become general in hospitals, it is as yet very little employed in private practice. He gives a very interesting account of the evolution of transfusion and infusion, and shows how the subcutaneous injection of saline fluid has practically superseded the transfusion of blood and the other methods of saline infusion. It is easier, requires less assistance, and is less risky than intravenous injection, and is only ten to fifteen minutes slower in action—a period of time which would be occupied in preparations for the more difficult method. It is also more satisfactory than injection of salines into the rectum; and, as it presents no more difficulty or risk than the giving of an ordinary hypodermic injection, there is no reason why it should not be universally used. The author remarks that it is in obstetric work that the practitioner has most frequently to deal with serious hæmorrhage and its effects, and it is in midwifery that he has himself employed saline infusion. He describes six cases of very serious bleeding in which he injected salt water with the best results, and the measure apparently was the means of saving life in each instance. In one case he had nothing but a syringe holding five cubic centimeters. Adding some salt from the domestic salt-cellar to a jug of warm water, he filled his syringe and injected its contents over twenty times, the fluid each time being absorbed by the subcutaneous tissues in three to five minutes. In another case he gave 200 c.c. with a syringe holding 50 c.c. On other occasions quantities up to $1\frac{1}{4}$ litre were injected. The syringe is not the best instrument for saline infusion; it is better to use a rubber tube four or five feet long, armed with a large hypodermic needle at one end, and connected with a douche-can or a glass funnel at the other. When the tube has been filled and the needle inserted, a fall of three or four feet causes the fluid to flow as quickly as necessary into the tissues. Better than a single hypodermic needle is a T-shaped tube, closed at the ends of the cross portion, into which four or five needles are fixed. The instrument thus is a kind of hollow fork. It is obvious that the fluid will flow through four needles much more quickly than through one. The points should be inserted under the skin of the supraclavicular region, the breast, the abdomen, or any other suitable part of the body. The water should have been boiled, and then cooled down to 100° F. A teaspoonful of common salt should be added for each pint of water used. The fluid is absorbed at a considerable pace by the cellular tissues, and, as it enters the circulation, the vanished pulse returns, the dyspnœa disappears, and the patient gradually returns to life.

The *American Gynæcological and Obstetrical Journal* for July, 1899, contains a paper by Dr. Davis on "**The Cause of Eclampsia and the Diagnosis of Impending Eclampsia.**" After pointing out the inadequacy of previous theories as to the causation of this disease, the author states that the weight of evidence is distinctly in favour of the belief that a profound toxæmia originating within the bodies of mother and fœtus is the cause of eclampsia. The *post-mortem* changes are degeneration of cell

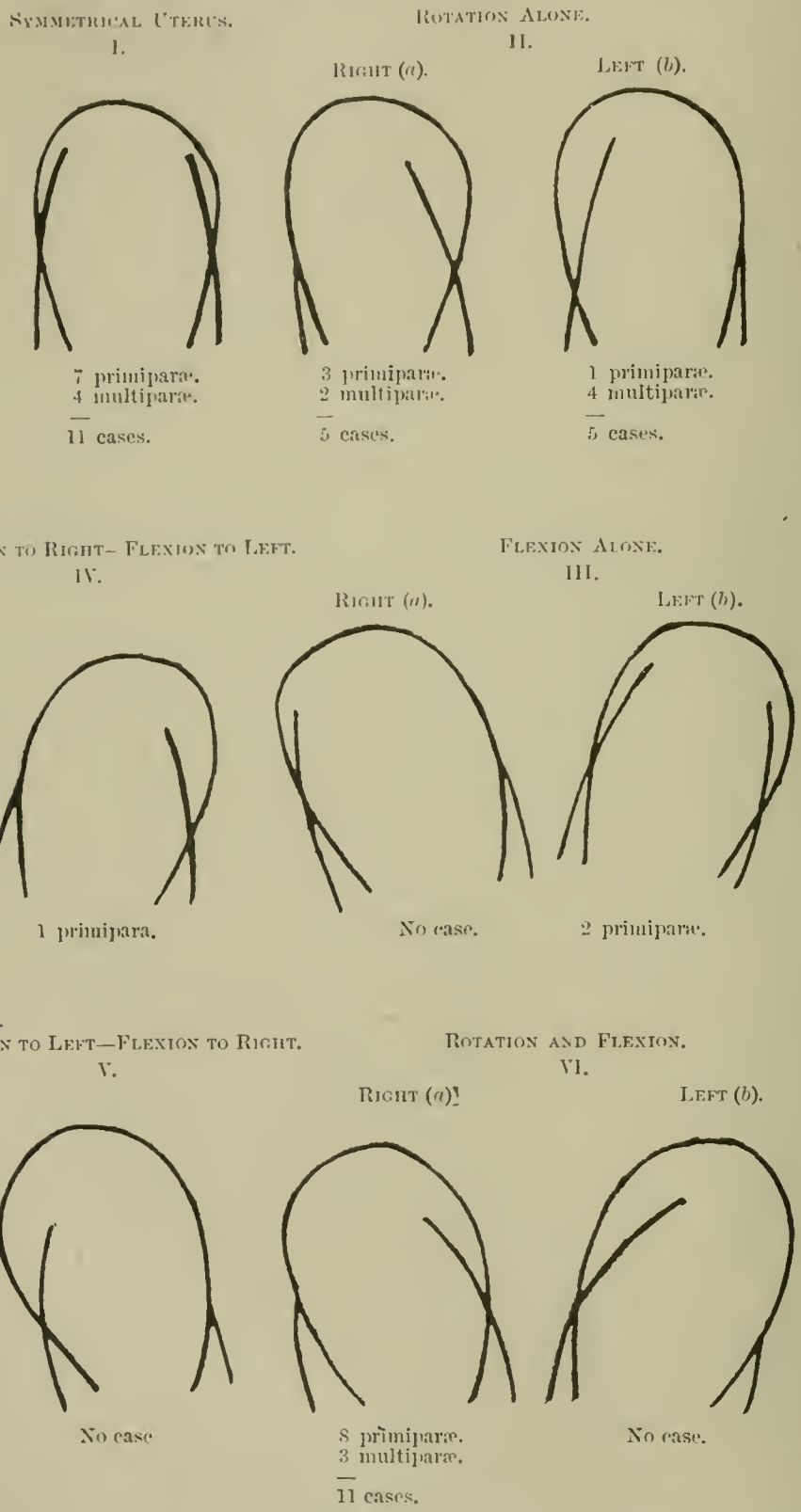
protoplasm in the liver, mainly around the central vein of each lobule, degeneration of the epithelium of the convoluted tubules of the kidneys, and hæmorrhages in the placenta. Attention is called to the importance of the liver in this connection. The urine of eclamptics injected into animals is but feebly toxic, while the urine of healthy individuals is often highly toxic. But this is because the toxins of eclampsia, while absent from the urine, are retained in the blood serum and in the organs of the body. If the urine were toxic, the patient would get rid of the poison, and would not be intoxicated. The serum of eclamptics is highly poisonous to animals. It is difficult to obtain the serum of patients threatened with eclampsia for examination, nor is it easy to determine the toxicity of the urine ; but we have in urea a body which serves as a sort of clinical index to the metabolism of the body. Though not itself a poison, its excretion corresponds to that of the poisons concerned, and diminution in the quantity of urea excreted indicates that toxins are being retained. The pregnant patient rarely excretes a normal amount of urea, but less than 1·5 per cent. is suggestive of impending eclampsia. Some idea of the amount excreted may be formed by multiplying the last two figures of the specific gravity of the urine by the factor 2·33, which gives approximately the total solids excreted. If this is low, the total daily urine should be measured and the daily urea estimated by a reliable method. The presence of sediment calls for microscopic examination. Apart from the investigation of the urine, jaundice is an especially grave symptom. The skin, the intestine, and the lungs must receive full attention to ascertain the part they are playing in elimination. The nervous system is profoundly affected by the poison. Neuralgia, ptyalism, pruritus, nausea, insomnia, skin pigmentation, eruptions, and excessive sweating have all been traced to the same source. Melancholia and mania belong to the same train of symptoms.

In the same journal Dr. Norris discusses the **Preventive Treatment of Eclampsia.** "Good pulmonary ventilation, and a diet of easily digested, readily oxidised, non-constipating, non-toxic food must be secured." Moderate outdoor exercise, the avoidance of compression of the waist by the corset, frequent bathing, and the selection of proper underwear, are strongly urged. The advantage of calomel as a laxative is very great, since it is probably the best intestinal antiseptic, besides acting on the liver, the organ which specially requires attention. "For graver cases showing marked toxæmia, with the percentage of urea diminished below 1 per cent., the specific gravity of the urine below 1,010, and the quantity of urine reduced to 800 or 1,000 grammes (about 1¼ pint) per day, the most active treatment is demanded. Rest in bed and an exclusive milk diet, with the use of mercurial and saline purgatives, are necessary. Digitalis, diuretin, benzoic acid, and other drugs have been used for their diuretic effect; but Dr. Norris is convinced that the more rational plan is to rely upon mechanical diuretics, such as an abundance of pure drinking water and rectal injections of salt solution, and also upon elimination by the skin and bowels. Termination of pregnancy should be secured if the treatment above outlined does not cause definite improvement in the course of one or two weeks. Eliminative treatment must be continued after the uterus has been emptied.

Under the title "Lectures on Hæmorrhage and Eclampsia" (Clay,

Edinburgh, 1899), Dr. Jardine has just published six lectures, delivered in the Glasgow Maternity Hospital. Some of these have already been referred to in this review. Not less interesting and more striking than the others is the lecture upon "**The Treatment of Eclampsia by Intracellular Injection of Saline Fluid.**" Dr. Jardine adopts the view that eclampsia is due to a poison which accumulates in the blood until the nervous centres are seriously affected. While the liver seems to be primarily involved, the kidneys are unable to overtake the extra work thrown upon them. "The presence of albumen in the urine merely indicates that the kidneys are sadly out of gear." "If we have a toxic substance circulating through the system, there are three main channels through which it may be got rid of—viz. the bowels, the skin, and the kidneys. All these channels are useful, but the most useful one will be the one belonging to the system which is chiefly involved. For instance, if the toxæmia arise from absorption through the bowels, as with a fæcal accumulation, the bowels must be thoroughly cleared out. In the case of eclampsia it is the urinary system which is chiefly at fault, and this is the channel through which we should strive to get rid of the poison. At the same time, the two other channels must not be neglected." This is the position from which Dr. Jardine starts. He employs the hot pack or bath to produce free action of the skin, with enemata to promote elimination of toxins by the bowels. Croton oil he mentions as an unreliable drug for the latter purpose. It is, however, with the idea of getting the kidneys to act as freely and as quickly as possible that he has adopted the method of giving large saline injections into the subcutaneous tissues of the body. The solution mostly used was one part of bicarbonate of potash to one of common salt—one drachm to the pint of sterilised water at 100° F. The bicarbonate of potash is added in order to obtain the powerful diuretic action of the potash salts. Dr. Jardine points out that the salts of potash are much more powerful diuretics than those of soda, but they are also, unfortunately, much more poisonous. He has not, however, met with any symptoms of potash poisoning. In the later cases a solution of acetate of soda was used (sodium acetate and chloride, āā ʒi to the pint). The apparatus used is an aspirator trocar and cannula, a few feet of rubber tubing, a test-tube-shaped filler, and a piece of adhesive plaster. The injection is made conveniently under the edge of the breast before delivery; the lax abdominal wall, after delivery, also being a good situation. Dr. Jardine has run in a pint in four minutes, but three or four pints are usually employed. Absorption begins at once, and is complete in fifteen or twenty minutes. Some pain is experienced until the tension disappears, but no abscess or other trouble has been observed at the seat of puncture. Details of 17 cases are given in which appropriate treatment was used for controlling the fits, emptying the uterus, and aiding elimination by the skin and the bowels, and in which saline injections were employed in order to increase the flow of urine, and so aid elimination by the kidneys. The striking feature of this series of cases is the marked success of the injections in causing a free flow of urine. Analysis showed a marked increase in the daily excretion of urea and uric acid. There is probably a corresponding increase in the excretion of the poison which causes the disease. The number of cases is, of course, too small to allow of any definite statement as to the

value of the method. Some of the patients were moribund on admission, so that the mortality in the series of cases (5 in 17) has no special



significance. The method is probably of great value, and is well worthy of extended trial.

In the *Glasgow Medical Journal* for July, 1899, Dr. Maclennan writes on the **position of the gravid uterus** at the onset of labour, as regards rotation and lateral deflexion. In his observations the position of the uterus was determined by palpation of the round ligaments, which are easily recognised during labour pains. The uterus is said to be symmetrical in position when its long axis is in the middle line of the body, and when the origins of the right and left round ligaments are equidistant from the middle line, showing that the uterus is not twisted on its long axis. Right or left flexion is present if the long axis of the uterus inclines to the right or to the left. Right rotation occurs when the uterus is twisted on its long axis toward the right, the left round ligament coming forward, the right passing backward. In left rotation the reverse, of course, occurs. The results of the author's observations are expressed in the accompanying diagrams (see p. 690). He gives the presentation and position of the fœtus and other relevant details in each of the thirty-six cases, and draws the following conclusions :—

1. Right flexion with right rotation is by far the commonest deviation. No case of the converse observed.
2. Flexion is caused by purely mechanical conditions, and it will tend to produce rotation to the same side.
3. Flexion has no relationship with presentation or position of the fœtus.
4. Rotation is due to laxness of the uterine ligaments, and possibly to irregular contraction, but not to an irregular arrangement of the muscular fibres. It may replace latero-flexion as an attempt at accommodation.
5. Flexion without rotation was only observed in contracted pelvis.
6. An absolutely symmetrically placed uterus is more common in primiparæ, but one medianly placed and accompanied by rotation is commoner in multiparæ.

SURGICAL DISEASES OF CHILDREN.

By RAYMOND JOHNSON, B.S., F.R.C.S.,

Assistant Surgeon to University College Hospital, and to the Victoria Hospital for Children.

On December 13, 1898, an important communication was made to the Royal Medical and Chirurgical Society by Messrs. J. Hutchinson, Junr., and H. L. Barnard on the subject of **separation of the lower epiphysis of the femur**. The same surgeons published a further communication on the subject in the *Lancet*, May 13, 1899. The injury is at once a rare and a very serious one. As might be expected, it usually occurs in boys, and appears to be generally the result of severe violence producing forcible hyper-extension of the knee. In no less than seven out of the sixteen cases recorded in these two communications, the separation was produced by the child hanging on the back of a cart and having his leg entangled in the wheel. From the nature of the injury, it results that the epiphysis is carried forwards, whilst the periosteum, retaining its firm attachment to the epiphysis, may be extensively torn from the front of the shaft. The sharp

posterior edge of the lower end of the shaft may thus cause serious pressure on the popliteal vessels, and, if the injury be compound, the end of the shaft projects through the skin covering the popliteal space. It is, however, with the treatment of the injury that the authors are chiefly concerned. They insist upon the fact "that in the extended position of the knee, even with an anæsthetic, reduction of the fragment is often very

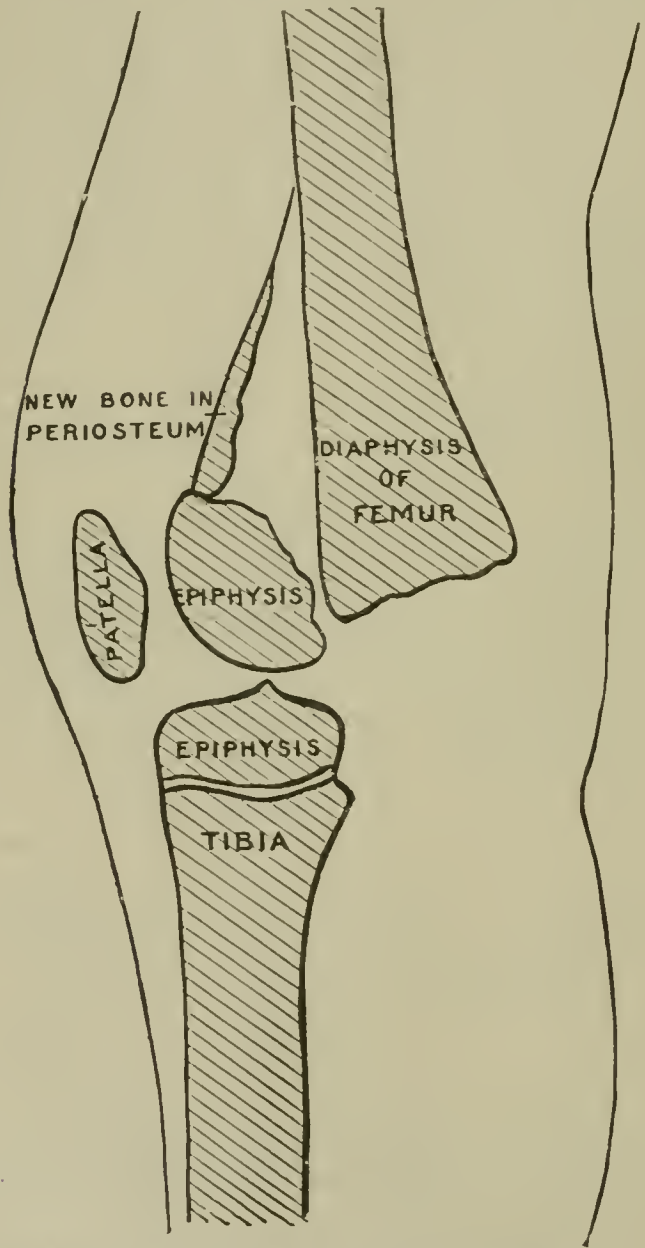


Fig. 1.—Persistent backward displacement of the diaphysis of the femur, after treatment with weight extension.

difficult," and "that when treated by extension and a long Liston's splint, it is almost impossible to keep the fragments in position, and with a Macintyre splint it is sometimes difficult." The persistent backward displacement of the diaphysis after treatment with extension is well shown in Fig. 1, which was prepared by taking a tracing from a skiagram. The method of reduction recommended by Messrs. Hutchinson and Barnard

" was devised to make the epiphysis retrace its steps backwards, to apply the separated periosteum to the anterior surface of the femur, to withdraw the end of the diaphysis from the popliteal space, and, when these objects have been attained, to so fix the limb that the displacement cannot recur." " Under complete anæsthesia an assistant makes steady but strong traction upon the tibia in the line of the limb." "The operator then clasps his

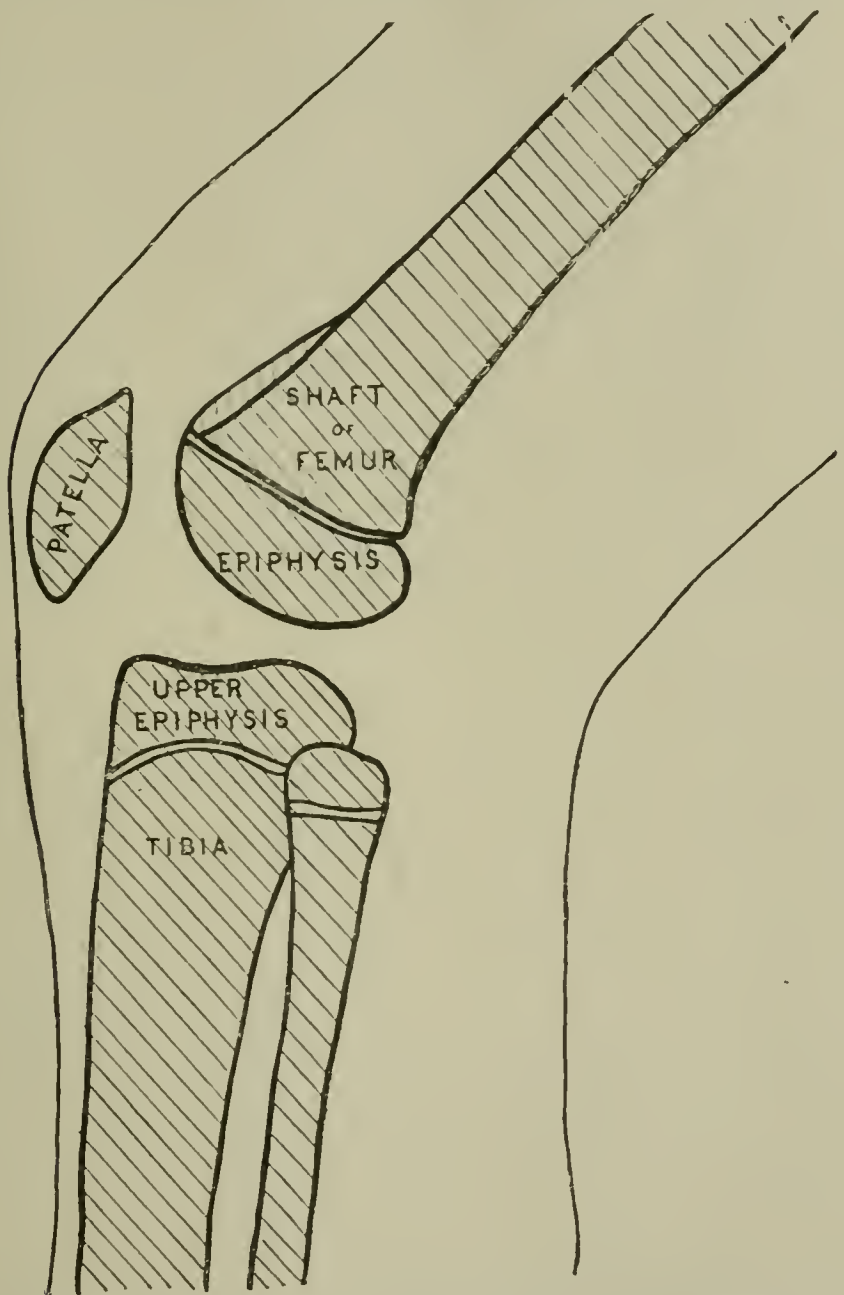


Fig. 2.—Epiphysis of lower end of femur in perfect position after treatment by flexion.*

hands beneath the thigh and draws it steadily upwards, *gradually flexing completely the knee and hip-joint.*" "A domette bandage is then applied around the thigh and ankle, fixing the heel upon the buttock, and the limb is laid upon its outer side on a pillow. An ice-bag can conveniently

* For the use of these Figures we are indebted to the Council of the Royal Medical and Chirurgical Society.

rest upon the front of the knee to limit effusion." "After fourteen days the limb is placed upon a Macintyre splint, flexed to as sharp an angle as possible, and this is gradually opened, until at the end of another fortnight the knee is fully extended. It is then put up in plaster, and the patient is able to get about. The plaster is kept on from a fortnight to a month ; a little massage restores the movements of the joint." Fig. 2, taken from a skiagram, shows the result of treatment by full flexion, as above described.

The amount of ingenuity displayed by surgeons in their endeavours to deal with that most distressing malformation, **extroversion of the bladder**, is really astonishing, and numerous communications on the subject have appeared recently. Sonnenburg (*Deut. med. Woch.*, No. 14, p. 219, 1899) points out the many disadvantages of the various plastic methods for closing in the bladder wall, more especially the absence of any power of retaining urine in the bladder. He thinks the operations devised with the object of diverting the urine are more satisfactory, and regards his own method of excising the bladder and suturing the ureters into the furrow on the penis as the least dangerous. The danger of pyelo-nephritis is pointed out as a serious objection to the transplantation of the ureters into the bowel. With the object of preventing this complication by preserving the valvular character of the ureteral apertures, Maydl has transplanted that portion of the bladder wall into which the ureters open into an incision in the wall of the sigmoid flexure. In a recent communication (*Wien. med. Woch.*, Nos. 6–8, 1899), Maydl has recorded his own results with this operation. Of the first five cases, four recovered and one died, and of a second series of five cases all recovered.

A very ingenious method of closing the bladder has recently been practised by Rutkowski (*Centralblatt für Chirurgie*, No. 16, p. 473, 1899). In this operation the anterior wall of the bladder was constructed from an isolated segment of small intestine. The possibility of such a procedure had been demonstrated ten years ago by Tizzoni and Poggi, who completely excised the bladder of a dog, and constructed a new one from a segment of gut. Rutkowski's patient was a boy, aged twelve years, in whom the urethra had already been closed, but in whom two attempts to close the bladder had failed. The abdomen was opened by a median incision above the extroverted bladder, and a segment of the ileum six cm. in length was cut out and the ends of the bowel united by sutures. The isolated segment, still attached to its mesentery, was split open longitudinally, so as to form a quadrilateral flap. The bladder was next separated from the abdominal wall, and its margins accurately adjusted to those of the intestinal flap by two rows of sutures. The abdominal wall was then closed with sutures in front of the bladder, and a catheter introduced into the latter. The abdominal wound healed by first intention, and the sutures were removed on the tenth day. The patient was lost sight of after leaving the clinic at the end of two months ; at this time he could retain twenty-five c.c. of urine in the bladder.

Mikulicz (*Centralblatt für Chirurgie*, No. 22, p. 641, 1899), at about the same time employed a similar method in the treatment of a case of ectopia vesicæ, but, instead of performing the operation in one sitting, carried it out in several stages. The portion of gut used for the closure of the bladder was in this case a segment of the lower ileum twelve cm. in length. The reason given by Mikulicz for performing the opera-

tion in several stages is that his researches with Herrmann had shown that the fate of an isolated segment of bowel varied. As a rule, the bowel remained well nourished, but in some instances the wall of the gut, especially the mucosa, became much atrophied. The first step in the operation consisted in isolating the segment of bowel, closing one end with sutures, and attaching the other end to the abdominal wall close to the exposed bladder. Then, when it was certain that the condition of the bowel remained satisfactory, the further steps of the operation were proceeded with. The first stage of the operation was performed on June 18, 1898, and the last stage on February 4, 1899.

The capacity of the bladder was 100 c.c., and the result seemed to be in every way satisfactory.

Congenital idiopathic dilatation of the colon is the subject of an article by Crozer Griffith in the *American Journal of the Medical Sciences* (September, 1899, p. 283). Although called "congenital," the condition is not usually recognisable at birth, but appears early. By "idiopathic" is meant that it is not the result of any discoverable organic cause, such as stricture or occlusion. The clinical features of the affection are studied in twenty-four recorded cases. The chief symptoms are abdominal distension and constipation, which in twenty-two cases appeared within the first three months of life. The abdominal distension varies in degree, but is usually very marked, and is partly dependent upon the degree of constipation. Often the distended colon is visible, and the peristaltic movements may be seen. Of the twenty-four cases, twenty were males. The general health sooner or later suffers, and dyspnœa may be caused by the abdominal distension. The prognosis is very unfavourable; eighteen out of the twenty-four cases are known to have died, nearly all in infancy or childhood. Of the remaining six cases, four were lost sight of and two recovered —one a case of Osler's after colotomy. From a study of eighteen autopsies and one laparotomy, it appears that the conditions are very constant. The dilatation is generally described as enormous, and in nearly all it was not confined to the sigmoid flexure, but involved the whole colon. In nearly every case the walls of the colon are described as thickened. In several instances there was ulceration of the colon, and in nearly all of these cases there had been diarrhœa.

Massage should be carefully performed in cases without diarrhœa or tenderness, and electricity may be useful. Purgatives or enemata cannot usually be altogether avoided. If other measures fail, operation may be necessary, as in Osler's case above mentioned, in which an artificial anus was made by Halsted; in one of Griffith's cases the same treatment was adopted, but without success.

During the last few years numerous communications have appeared, especially in Germany, on the subject of the **intercurrent attacks of inflammation** which form a striking phenomenon in many cases of **cystic lymphangiomata.** During such an attack, the tumour, usually situated in the neck, becomes increased in size, and tender, and there is more or less marked elevation of temperature. Distinct shrinkage of the tumour may follow the subsidence of the inflammation.

Tavel of Bern (*Centralblatt für Chirurgie*, No. 30, p. 817, 1899) deals with the cause of these inflammatory attacks. Küttner suggested that the inflammation was infective in nature, but brought forward no observations

in support of this view. Wegner regarded the inflammation as caused by a bacterial infection, and suggested that the infection occurred either from some slight lesion in the skin over the tumour, or through the lymphatics from a neighbouring mucous membrane. In the case of the lymphangiomata occurring in the neck, this infection would occur from the mucous membrane of the upper part of the digestive and respiratory tracts, which are known to be normally the seat of streptococci. Such an infection is possible, because it has been shown that the cystic spaces of the growth are in direct continuity with the lymphatic vessels of the neighbourhood. In Tavel's case the lymphangioma was very extensive, and was situated in the left side of the neck of a child four months of age. During an attack of inflammation, the growth became so much increased in size as to cause urgent dyspnœa, and for this reason an operation was undertaken for its removal. The growth was easily separated from the skin, but with some difficulty from the larynx and œsophagus. The dissection was very extensive, and involved ligature of the superior thyroid, lingual, and facial arteries, and freely laid bare the common carotid. Some small cysts beneath the sterno-mastoid were not removed; a large cyst closely connected with the carotid artery was punctured and muco-pus evacuated. The wound healed well, and the cysts which were left beneath the sterno-mastoid completely disappeared. During the operation it was clearly made out that some large lymphatic vessels entered the growth. The pus from the deep cyst was found to contain diplo- and strepto-cocci, and a pure culture of strepto-cocci was obtained from it. The nature of the inflammation in this case was thus clearly demonstrated, and it may safely be assumed that the infection occurred along the lymphatic tracts of the neck, probably from the mouth or one of its accessory cavities.

The importance of a thorough acquaintance with the various phases presented by the acute infective bone inflammations of young subjects is so great that every communication throwing fresh light on the subject, or drawing special attention to any particular form, is of value. Mr. Edmund Owen has, therefore, done good service in bringing before the Royal Medical and Chirurgical Society some cases illustrating the serious results following **acute infective inflammation of the intracapsular portion of the upper end of the shaft of the femur** (*Med. Chir. Trans.*, vol. lxxxii. p. 65, 1899). The hip-joint is peculiar in that the end of the femoral diaphysis enters into its formation, and thus acute suppuration beginning in this part of the bone almost necessarily causes acute arthritis of the hip. "The child is attacked suddenly, and in the course of a few days the symptoms may have attained alarming intensity." "The child looks extremely ill, and, though its face may at times be flushed, it may be extremely pale, and the expression anxious. There will probably be a history of sleeplessness, and most likely of delirium." As a rule, the temperature is high, although later it may be depressed, as the result of collapse due to the profound septic poisoning. The pain is very severe, and often attended with startings. The limb is usually flexed and adducted, and there is probably some swelling about the hip and thigh, with marked tenderness on pressure. The affection may easily be mistaken at first for acute rheumatism, especially if, as is not uncommon, it is complicated with pericarditis. The prognosis is exceedingly grave, and such cases call for very prompt and energetic operative treatment. The hip-joint must of

necessity be opened, and as this is itself involved, "it is better to remove the chief part of the intracapsular portion of the femoral diaphysis with a key-hole saw, to thoroughly disinfect the articular area with a hot solution of zinc chloride (10 grains to the ounce), and, leaving in a large drain, to close the surface-wound only so far as seems expedient."

ODONTOLOGY.

By ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S.,

Professor of Dental Surgery in King's College; and Dental Surgeon to King's College Hospital, etc.

Dental degeneracy in Modern Britain.—The above subject, always interesting to the student of biology, has attracted special attention recently, owing to an exceedingly able contribution to existing theories from the pen of Mr. Cantlie. Mr. Cantlie's treatment of the subject is vigorous and sensible, and goes nearer the mark in explaining the apparently increased and increasing prevalence of dental caries among our children, rich and poor, than most previous treatises on the subject. Mr. Cantlie assumes as an acknowledged fact that decay in the teeth of children *is* rapidly increasing, and then points out that poor teeth must inevitably produce poor assimilation and impoverished physique generally; and that to submit to the fact that our children are to be dentally deficient is to acquiesce in the consequence that our men and women will be a degenerate and decaying race. No one, we imagine, would philosophically contemplate such a future for our people; therefore, something must be done—the cause must be found and removed: moreover, the remedy must be prevention, for cure will not suffice.

As to the cause, several absurdities that have done duty as "explanations" are swept away in a few brief sentences. The eating of sweets takes place after the teeth are formed and calcified—at any rate, all those portions which will be exposed to the caries-producing agencies. The evolutionary idea, that the imperfection is part of a general tendency on the part of the human dental armature to disappear, is treated with the ridicule it deserves; for the theorists who imagine that one or two generations can witness a noticeable step in evolutionary change should be referred to some simple preliminary handbook on evolution for six months, and then be allowed to blush in obscurity and silence. The idea that we attract blood to our brains at the expense of our teeth in the quest for knowledge, and thereby interfere with a formation that was complete when we were two years old, must have sprung from the brain of a man with splendid teeth! Two familiar suggestions are not touched upon. One is that inherited defects are more pronounced in the firstborn children, and that the artificial limitation of families prevents the later healthier offspring from coming into existence—an ingenious, but insufficient, theory. The other is that there is a gradual tendency to devote the phosphorus in the system to brain formation rather than to calcification—an inherited condition, of course; but this theory presupposes that modern

education makes greater demands upon our brain power—which many people would think was assuming too much in an age in which the sixpenny magazine takes the place of Scott and Dickens, and the halfpenny "special" saves the trouble of thought. Mr. Cantlie refuses to be satisfied with any of these suggestions, and prefers to look for another. He notes that three things have become factors in English life, or, at any rate, forced themselves upon our notice at much the same period, and the relation of these facts, as cause and effect, forms the substance of his present paper. They are—the feeding-bottle, adenoid growths in the naso-pharynx, and increased dental decay. The feeding-bottle enables the modern mother, if poor, to work, uninterrupted by maternal duties; if rich, to play uninterruptedly at what society calls her "duties." It administers food, which should be constantly of an even temperature—about 99°, at 120° or 130°, with a drop of 20° during the exhaustion of a single bottle; the mucous membranes are irritated; nutrition is perverted; moreover, the ingesta are, of course, not nearly so satisfactory as those supplied from the breast. But worse remains: the feeding-bottle sets the mother free to neglect her duty and pursue her fads; and now the nurse must be considered, and the diabolical ingenuity of the modern inventor supplies the comforter, or solid teat, and nurse can sleep in peace or converse pleasantly with soldiers and policemen as much as she likes. Meanwhile, what is happening to the baby? It is quietly sucking harder and harder, to see if something will not come out of the indiarubber fraud. Its buccal muscles grow stronger, and push in the alveoli towards the middle line, crowding together the developing gums, and forcing up the roof of the palate; the V-shaped arch, the overcrowded mouth, are being prepared, and much money will have to be spent hereafter partially to remedy the consequent unsightly and unhealthy condition. But this is by no means all. The squeezing up of the roof of the mouth is invading the floor of the nasal passages: mouth-breathing, with all its attendant evils, becomes a necessity; the adenoid tissues of the nasal passages are bathed in increased mucous secretion, instead of being traversed by natural currents of air, "and they grow and protrude from the surface as do vegetables in the forcing pit of the gardener." The way is made easy for the admission of the germs of tuberculosis, and health, beauty, and even life, are becoming endangered. It is our duty, as guardians of the public health, to see whether Mr. Cantlie's explanation is the true one. The British Medical Association has already appointed a committee to examine into and report upon the subject, and we trust that some definite good may come of the investigation.

Criticism of the theory will do it good, not harm, if it be capable of substantiation. It may be suggested that the early prevalence of decay is *assumed;* it is difficult of proof. Extended observation, of course, brings to light mischief of which a less inquiring age left no record. The constant quotation of elderly relatives who have never lost a tooth loses some of its weight when we remember that elderly relatives who *have* suffered, and consequently wear artificial substitutes, are not always so ready to inform their juniors of the fact. Again, with all these dire influences at work, we have to confess that the physique of the race, as shown by athletic records, is improving, and that the development of the female part of the population is notoriously finer than it used to be; modern women lead, on the whole, healthier lives—at any rate in the upper and middle classes.

Lastly, Mr. Cantlie assumes that, when the calcified portion of the permanent tooth is fully formed, it is no longer affected by changes of nutrition. Most people will agree with him; but it is not quite a proved fact. The researches of Mr. A. V. Galippe (see *Journal Brit. Dent. Assoc.*, vol. vii., 1886) went far to show that dentine undergoes nutrient changes in the direction of removal of lime salts, during certain pathological states, and during pregnancy. Moreover, since fully formed dentine is not outside the pale of sensation, it is difficult to imagine that it should be beyond the reach of nutrition, and that all the influences that make for its liability to caries are external. Much will, no doubt, be said now the discussion has been so ably opened, and Mr. Cantlie is to be congratulated upon having opened the door to an investigation which it may not be an exaggeration to describe as of supreme importance to the national welfare.

It will not be amiss in this connection to recall the attention of Mr. Cantlie and those interested in this subject (and who is not ?) to what may be described as the first serious attempt to attack this great problem. I allude to the Presidential Address delivered before the British Dental Association by Mr. James Smith Turner in 1891 (*Journal Brit. Dent. Assoc.*, 1891, p. 517). Mr. Turner dismisses the absurd evolutionary explanation at once, and states that the direct cause is a deficiency of lime salts, and favours the view, alluded to above, that increased brain development and activity—as an inherited condition—make an increased demand upon the phosphorus in the system at the expense of the calcified tissues, and that these latter suffer starvation in proportion as their proper amount of phosphorus is great—enamel most of all. But the keynote of this matter is touched by Mr. Turner in the following sentence: "Plainly, I think that the duties of maternity exist long before the birth of a child. Again, I do not say that a child may not flourish on other food than that originally intended for it by nature . . . but, whether the mother's deputy be he wet-nurse or the feeding-bottle, a great facility is offered to those who are unscrupulous enough to disregard the future welfare of the child in taking their own ease." The artificial food in infancy, and in after life, is here condemned, and the duties of maternity insisted upon, both before and after childbirth. The whole address should be carefully read and digested by all who have sufficient interest in the problems involved.

Pyorrhœa alveolaris.—A small treatise on this subject, by Mr. John Fitzgerald, has lately been added to the almost endless mass of pyorrhœa literature. The little book is compact and lucid; it tells the story of past work in this direction briefly, but well, though the author has evidently drawn all his inspiration from our American cousins, not always safe guides in matters of science, more especially of dental science. Mr. Fitzgerald has succeeded in placing clearly before his readers current American opinion with regard to this distressing condition in a handy and readable form. The presence of tartar around the diseased root is regarded by Mr. Fitzgerald as a very important factor, but perhaps too much importance may be attached to this phenomenon; though tartar is usually to be found on the roots of teeth affected by pyorrhœa, it is not always so. Moreover, the fact that whenever a spot sheltered from the disturbing influence of mastication or the tooth-brush can be found, there we are almost certain to find tartar, would incline us to regard the tartar in these pockets as rather the natural effect than the cause of the condition. At the same time, the

presence of the tartar cannot fail to act as an irritant, and to assist in maintaining, if it did not cause, the condition ; and no one will question the propriety of its prompt and thorough removal. It might be added that the extraction of the offending tooth or teeth altogether may give the best chance of survival to their neighbours. The tartar does not even reach the diseased bone, but is always separated from it by some soft tissue ; lastly, the tartar cannot possibly get into the situation between the cementum and the peridental membrane until these two tissues have been already separated by disease, and it is this separation which constitutes the earliest recognisable stage of the disease. Mr. Bland-Sutton's observations in comparative dental pathology (*Trans. Odont. Soc.*, 1884) have inclined him to attribute pyorrhœa in animals (a not uncommon condition) to a constitutional taint, thinking the tartar present is due to the sheltered situations afforded by the sockets, and the tenderness of the affected teeth, which, leading to their instinctive disuse, favours the accumulation. Mr. Bland-Sutton notes in animals the existence of two distinct varieties of premature absorption of the alveoli, in one of which tartar is not necessarily present, in the other it is. In the former class the osteoporotic process it always associated with general disturbance of the osseous system, loss of weight and change of consistency in the other bones being constant symptoms ; in the latter, the disease is apparently local. There is one important point in the pathology of the alveolus itself that must not be forgotten, and that is, that it is the bone *between* the inner and outer alveolar plates that suffers first, and not the plates themselves.

Microscopical : a modification of Weil's process of embedding.— The difficulty of obtaining reliable observations of the minute anatomy of teeth has been long recognised as depending upon the apparent impossibility of obtaining good sections of the hard and soft tissues *in situ*. Dental histology to a certain extent defies the explorer ; the relations between the soft and hard tissues at the juncture of the pulp and the dentine, and throughout the latter substance, throughout the cementum and (if there are soft tissues there) throughout the enamel, have been the subject of much learned guessing and much unlearned romancing ; but the difficulty of so preparing the sections as to show the tissues *in situ*, and fairly unchanged, has not yet been solved. The plan of decalcifying the hard parts and hardening the soft is open to the objection that, in removing two-thirds of the substance of the object to be examined, you to some extent alter its character, and a decalcified tooth is not a safe base from which to argue the histology of dentine, much less enamel. Consequently, everyone welcomed the process suggested by Professor Weil, which he in turn had partly borrowed from Koch, by which it was proposed to submit the soft tissues to a process of interstitial embedding with Canada balsam, and in this manner render them sufficiently hard to admit of their being ground with glass, together with the calcified tissues. Tempting as the idea seemed at first, it was soon found to be, in practice, a very cumbrous and complicated process, involving the subjection of the soft tissues to a series of powerful reagents, and to very great alternations of temperature ; so that, after all, it was highly probable that the soft tissues were profoundly modified by the process, and that whereas the old decalcification obliterated much that had been in existence before treatment, this new balsam or

petrifying process brought into existence many histological wonders that had not existed before; in fact, many observations have been made of a very surprising kind from such sections which no other methods of preparation have confirmed. At the annual meeting of the British Dental Association (*Journal Brit. Dent. Assoc.*, July, 1899, p. 421) Mr. S. F. Rose read a paper giving an account of a proposed modification of this Weil process in the direction of simplicity and abbreviation.

Mr. Rose proceeds as follows :—

The tooth is divided with a fretsaw, if a transverse section be required, or ground down on both sides till the pulp is well exposed for a longitudinal one, and dropped at once into absolute alcohol to fix, and left there for a week, which both hardens the tissue and renders it readily susceptible of carmine staining. The sections are then immersed for three weeks in Grenacher's alcoholic borax-carmine, by which time the fibrils, interglobular spaces, and cement corpuscles will be well stained; there is no fear of overstaining. The sections are then given :—

(*a*) Two changes of absolute alcohol for twenty-four hours to dehydrate.

(*b*) Clove oil for twelve hours to clear.

(*c*) An hour in xylol.

(*d*) A day or two in chloroform.

Desiccated Canada balsam is now added to the chloroform a little at a time until the consistency of thick treacle is reached; they are now ready for the water bath.

The sections are placed in a teacup, which is suspended in a treacle tin of water, which is kept just below boiling point by a Bunsen flame, the water being replenished from time to time; it does not matter if the water occasionally boils. The chloroform first comes off rapidly, and after a few hours the balsam stiffens.

The sections are now removed with forceps, carrying as much balsam as sticks to them, and placed (not touching each other) in a small flat-bottomed tin vessel that will float on the water in the treacle tin, and the heating continued, and in twenty-four hours or so the requisite brittleness will be obtained. The sections are then ground thin on a carborundum wheel, with plenty of water, and, finally, between two glass slabs with water only; any powder, such as pumice, would get worked into the balsam. The glasses may with advantage be previously roughened by grinding silver sand between them. When thin enough, the sections should be washed, passed quickly through absolute alcohol and oil of cloves, and mounted in xylol balsam.

The above process is a very great improvement on Weil's original method; the unsightly perchloride of mercury and iodine stages are omitted, with all their attendant confusion, and a good deal of time is saved by the omission of the long series of baths in increasing strengths of alcohol. The main objection seems to be that the process limits the observer to the use of carmine as a stain; but this difficulty will no doubt be presently obviated.

Operative dental surgery.—A considerable advance has to be recorded during the past year in the direction of the increased use of portions of porcelain teeth to replace the ravages of caries, or the results of fracture. I had the pleasure of bringing this subject before the British Dental

Association at its annual meeting last Whitsuntide (*Journal Brit. Dent. Assoc.*), and there showing the results of many years' experiment in this direction. The advantages of solid pieces of porcelain over any other known filling material are the following. It is incapable of injury or alteration by any destructive agents existing in the mouth; nothing can wear it away; gold bands may rest upon its surface; no acid or ferment can affect it; its appearance is indistinguishable from tooth substance; it can be made any shape, and, consequently, any loss of contour can be restored by means of it, the corners or cutting edges of incisors, or the crowns of molars or bicuspids; its use obviates the necessity for destroying the live pulps even if exposed, as it forms an unyielding or immovable cap of a non-conducting substance. In all situations where the cavity is large enough and deep enough it is preferable to any known stopping, provided it remains in place (which it occasionally does not do; but this objection applies with greater force to other stoppings). If, as I maintain, only the original surface of a mineral tooth should be allowed to show, and not a *ground* surface, the process of preparing the inlay is extremely difficult and tedious, and requires very delicate handling. The first thing to do is to take an impression of the cavity in pink wax, and get a correct cast in plaster; then a tooth of the right colour is chosen, and the piece cut roughly to fit the cavity on a carborundum wheel: the subsequent fine fitting should be done with diamond wheels on the dental engine. When the piece fits exactly, and the bite is seen to be clear, grooves are cut on the back of it, and, the cavity having been filled with Harvard cement, the piece is pressed into position, and varnished over to let the cement set unmixed with saliva. The chief anxiety is about the line of junction: it is there, if anywhere, that the fluids of the mouth may effect destruction. If, however, the line is very thin, so thin as to be practically imperceptible to the naked eye, nothing will happen. I have plenty of cases under observation in which the inlays have remained unchanged and unmoved for over ten years. In all noticeable caries in front teeth the advantages are so obvious as to scarcely require pointing out, the too familiar accident of the corners of the upper centrals being knocked off by a fall on the ice, or the still commoner pathological condition known as "honeycombed" teeth, where the cutting edges of the six front teeth are reduced to an irregular row of brown spikes, may be thus restored without interfering with the living pulp, and consequently without disturbing the colour of the tooth or impairing its vitality. Lastly, the form of destruction known as erosion may be very conveniently remedied by porcelain inlays. I do not care for the method of cutting the cavity to a shape to fit a stick of material, and then grinding down the piece flush with the tooth. It is impossible to get a perfect surface in this matter, and the inlay is apt to change colour as the patient moves; the device is solely to save the operator trouble. The process of fusing the required piece to a cast seems to offer a chance of better results, so far as surface goes; but I doubt the resulting colour being so exact as that of a carefully selected mineral tooth.

Reviews of Books.

Intestinal Obstruction: Its Varieties, with their Pathology, Diagnosis, and Treatment. By FREDERICK TREVES, F.R.C.S., Surgeon in Ordinary to H.R.H. The Duke of York; Consulting Surgeon to and Emeritus Professor of Surgery at the London Hospital; late Examiner in Surgery at the University of Cambridge. London: Cassell & Co., Ltd. 1899. Pp. 565. 118 Illustrations. Price 21s. New and Revised Edition.

IN writing any treatise on a practical subject in the realm of medical or surgical work three great essentials are required of any author. In the first place, knowledge of his subject is a *sine quâ non*, and this must include not only the ordinary facts met with in everyday text-books, but also those buried in more out-of-the-way places, such as smaller journals and transactions of societies. Next, our author should have had sufficient experience to be able to sift and weigh the evidence gained in such reading, collating it with his own observations, and thus being able to give it due value. Finally, he must be able to convey to his readers facts and deductions therefrom in a clear and lucid style which can be readily "understanded of the people." Mr. Treves, in the work which lies before us, may be looked on as the *beau idéal* of such an author. A mere cursory glance through its pages will convince any reader that there is plenty of mental pabulum to be absorbed, and that in its production all the most important medical literature of the past decade has been well ransacked. A little more careful reading will show that Mr. Treves has had the advantage of comparing the conclusions drawn from such a study with his own results, gained in the course of a very large private practice and in the well-stored wards of the London Hospital, while the whole is presented to us in language which is terse and lucid to a degree, and leaves one in no difficulty in understanding what is meant. Add to this these other facts, viz. that the work is mounted in the most perfect style, printed in beautifully clear, good-sized type, and illustrated lavishly, and it is scarcely necessary to say that the reading of such a book is not only valuable from its educational standpoint, but is also a literary treat.

Turning now to a comparison between it and its predecessor, one cannot help feeling that, although the former was good, the latter issue is much better. It is larger, fuller in every way, and arranged in a more satisfactory manner, so that one is scarcely wrong in maintaining that the former is to the latter edition as the skeleton to the fully developed body. The work is now divided into three parts, dealing separately with the pathological and clinical aspects of obstruction, and finally discussing the treatment. Two hundred and eighty-three pages are devoted to the pathological side of the question, and it is here very largely that the new material is incorporated; owing to the greater frequency with which operative treatment has been under-

taken, the earlier stages of the morbid conditions have been of late more frequently seen, before the lesions have been hopelessly masked by the incidence of a diffuse peritonitis. Many of the new illustrations are to be found in this section; most of those appearing in the old edition were wood blocks; the new ones are almost all process blocks, and mainly the work of Mr. Berjeau. The accompanying illustration (Fig. 1)

Fig. 1.

Hernia of medium size into the Fossa Duodeno-jejunalis (Lambl's case).

O, great omentum attached to transverse colon; ST, stomach; J, jejunum at orifice of sac; S, the sac; C, cæcum; Sig, sigmoid flexure.

is an admirable representation of a hernia into the fossa duodeno-jejunalis, and appears in a new chapter dealing with the subject of internal herniæ. The material stored in the College of Surgeons Museum has been well employed, and we are glad to note that the authorities of that institution have decided to place no hindrance in the way of those who would utilise the specimens therein contained for educational purposes, although in the past there has been an undercurrent of feeling that certain of them should be reserved for examinations alone. Fig. 2 is a fine representation of a circular cancerous growth of the transverse colon, derived from this source, and illustrating the points that the power of contraction

of the tumour may be very great, and that a considerable time may elapse before the patient suffers from any symptoms of importance resulting from its development.

One hundred and sixty-three pages are devoted to the clinical side of obstruction, a general summary of the symptoms being first given, then a consideration of the significance of definite symptoms, and finally the

Fig. 2.

Cylindrical Epithelioma of the Transverse Colon, forming an annular stricture. In the gut above the growth is a circular ulcer, the floor of which is formed solely of the serous membrane (*Royal Col. of Surg. Mus.*, No. 2529, A).

particular grouping of the symptoms in special conditions. It is interesting to note in this connection that Mr. Treves states that fæcal accumulation is the most common cause of obstruction, and after that, strangulation by bands.

Treatment is discussed in the final 110 pages under the headings of acute and chronic obstruction, and the remarks made thereon are clear and much to the point. General facts are first considered, and we cannot

refrain from culling a few of the more salient remarks. "Morphia is an absolute necessity in acute intestinal obstruction," not only to ease the agonising pain but also to quiet excessive peristalsis. In volvulus it is also valuable in order to arrest its formation, or even possibly to effect a cure if it has not progressed too far. Its value in intussusception can scarcely be overrated in order to arrest peristalsis and prevent increase of the invagination. On the other hand, full and explicit warnings are given as to the danger of utilising this drug, which masks symptoms and raises false hopes; indeed, as Mr. Treves sarcastically remarks, "the delusions and visions begot by morphia are not limited to the takers of the drug." It is also desirable in most cases to obtain an evacuation of the lower bowels by an enema, but the surgeon must not add to the patient's already heavy burden of discomforts by unnecessarily repeating these. The question of feeding is, according to our author, unimportant, since the patient should be starved and not fed. He gives, however, directions as to the administration of nutriment in suitable cases, casting considerable doubts, by the way, on the value of rectal alimentation. Measures other than operation in bad cases are looked on as mere feeble excuses for avoiding or delaying the same. Mr. Treves is in no favour of delay; the sooner the operation is undertaken, when once its desirability has been decided upon, the better. He gives very full directions as to how to set to work. In very extreme cases he admits that it may be advisable only to open one of the most prominent coils of distended intestine, and drain off the contents without searching for the absolute source of the obstruction, but he condemns this method as extreme, irrational, and blindly devised, and casts doubts upon the good results that have been said to follow, or perhaps rather doubts the accuracy of the diagnosis of true obstruction. In all probability we shall hear less of this proceeding as medical practitioners more clearly grasp the idea that the treatment of intestinal obstruction should be in the hands of the operating surgeon, and that delay is more dangerous than the operation itself. We cannot allude to more of the multiplicity of good things contained in this book, but would advise all our readers to buy and study it. A. CARLESS.

The Diseases of the Stomach. By WILLIAM W. VAN VALZAH, M.D., and J. DOUGLAS NISBET, M.D. The Rebman Publishing Co., Limited. 1899. 8vo. Pp. 674. Price 20s.

THIS is the third large and detailed work on the stomach that has emanated from America within two years, and, like its predecessors, it shows the growing tendency to employ careful analyses of the stomach contents, and new instruments and methods of diagnosis. The earlier part of the present work is general in character, and is devoted to a consideration of the modern means of arriving at an accurate diagnosis, and to the therapeutical resources at our disposal. The written descriptions are supplemented by figures of stomach lamps, Kühn's pyloric sound, stomach tubes, and so forth: while the histological appearances of the gastric glands, both at rest and in activity, are graphically reproduced. Passing on to a systematic and special description of the diseases to which the stomach is liable, the authors first deal with the sensory dynamic affections—for example, bulimia, acoria, anorexia nervosa—then with the motor dynamic

affections, such as gastrospasm : and lastly, under the title of the anatomical diseases of the stomach, with gastritis, ulcer and new growth. The last section on "the vicious circles of the stomach" deals with the effects produced by diseases of the stomach on other parts of the body, and with the secondary gastric changes depending on disease elsewhere. There are a number of new and not very euphonious terms employed in the work, such as myasthenia and adenohypersthenia gastrica. On the whole, the reader will find this a reliable source of reference and fully up to date.

Aids to the Treatment of Diseases of Children. By JOHN MCCAW, M.D., Senior Physician to the Belfast Hospital for Sick Children. Second Edition. London : Baillière, Tindall & Cox. 1899. Price 3s. 6d.

THAT this book has found favour with some readers is sufficiently proved by the appearance of a second edition. It is a pity, however, that the author has not revised the book more thoroughly. We fear that the student who repeated in examination some of the statements made by the author would fare badly at the hands of the examiner. The remarks on etiology and pathology are particularly crude. We are told, for instance, that chronic hydrocephalus may be caused "by enlarged glands in the neck ; it may be part of a general dropsy, the result of cardiac or renal disease"! The division of "chronic phthisis" into (1) chronic pneumonic phthisis, the sputum of which we are told contains tubercle bacilli, and (2) chronic tubercular phthisis, comes very near to being a distinction without a difference. There is frequent reference to a condition which the author calls "Atalectasis," a startling innovation even in these days of phonetic spelling. It is with some satisfaction that we turn to the appendix, and find here at any rate some facts as to the preparation of foods, doses of new drugs, etc., which are likely to be useful to the reader.

Atlas of Legal Medicine. By Dr. E. VON HOFFMANN. Edited by Dr. FREDERICK PETERSON, assisted by Dr. A. O. J. KELLY. London : The Rebman Publishing Co., Ltd. 1898. Demy 8vo : 56 Plates in colours, and 193 Illustrations in black. Price 15s.

THIS is an excellent translation of Dr. E. Von Hoffmann's *Atlas der gerichtlichen Medizin.* It contains 249 illustrations of medico-legal subjects, with a brief descriptive account appended to each. Nearly every section of legal medicine is represented in this atlas, the illustrations including various forms of so-called hermaphroditism, unusual types of hymen, uterine and fœtal abnormalities, effects of various head wounds, injuries afflicted by weapons, burns, hanging, and strangulation, the effects of various poisons on the mucous membrane of the stomach, and abnormal *post-mortem* stains. The illustrations appear to be the best that have ever been published in connection with this department of medicine, and they cannot fail to be useful alike to the medical jurist and to the student of forensic medicine.

The Retrospect of Medicine. Edited by JAMES BRAITHWAITE, M.D. Lond., and E. F. TREVELYAN, M.D. Lond. Vol. cxix. January–June, 1899. Issued July, 1899. London : Simpkin, Marshall, Hamilton, Kent & Co.

THIS half-yearly volume appears with a regularity which brings a blush to the cheek of the conscientious reviewer. For no sooner is one

half-volume noticed than that for the following six months appears: and its contents generally prove so interesting that they are dipped into again and again before a notice is written. The present volume is arranged on the well-known lines of its predecessors, and we find in it something of everything, from chilblains to antistreptococcic serum. In addition to a complete index for the volume itself, there is a full index at the end for the contents of all the volumes in the three preceding years.

A Clinical Text-Book of Medical Diagnosis, for Physicians and Students. By Oswald Vierordt, M.D., Professor of Medicine in the University of Heidelberg. Authorised Translation, with additions, by Francis Stuart, M.D., of Brooklyn. Fourth American Edition from the Fifth German. Revised and Enlarged. 194 Illustrations. London: The Rebman Publishing Co. 1898.

It is a great boon to be able to obtain in easy English a translation of such a valuable work as that of Professor Vierordt, a work which has passed through five editions in nine years, and which has already been translated into Russian and Italian. We are already indebted to an American *confrère* for giving us three of the previous editions in English, and a translation of the last is now before us.

The reputation of the book is too well known for us to dilate on its merits now that it is in a fifth edition. It is a platitude to say that correct diagnosis is the basis of all treatment, but yet we cannot resist repeating it after a perusal of this excellent clinical manual. A glance at any of its pages will not only enlighten the practitioner on many diagnostic points, but will also indirectly supply him with suggestions of resourcefulness, and so increase his capacity for good. More truly useful treatment may be gleaned from it than from many a book of so-called "tips" in prescribing.

The book is worthy of the success it has attained.

Handbook of Medical Gymnastics. By Anders Wide, M.D., Lecturer in Medical Gymnastics and Orthopædy in the Royal Carolean Medico-Surgical Institute, Stockholm. With 93 Illustrations; pp. 375, royal 8vo. London: Sampson Low, Marston & Co., Ltd. 1899.

Dr. Wide's handbook, the first edition of which appeared in Sweden in 1896, and was subsequently translated into German and French, is already well known on the Continent, and the present English translation should be warmly welcomed as an authoritative exposition of the Swedish system of gymnastics.

One of the stumbling-blocks that the student encounters is the terminology. Dr. Wide has adhered to that originally introduced by P. H. Ling, the founder of the system, and in the English translation the literal equivalents of the original terms are given. These terms, though arbitrary, are clearly defined, and are soon mastered. Those who are acquainted with English military drill will find that some of the most important, *i.e.* the so-called "fundamental positions," are common to military and medical drill. The chief fundamental positions a person takes for the performance of gymnastic movements given by the author are the standing, sitting, lying, and hanging positions.

"The standing fundamental position arises when the feet are placed at right angles, the one as far forward as the other, and with the heels close together; the legs are kept well stretched, not only in this knee, but also in the hip-joints; the spine is kept stretched and straight in all its length, by means of which the pelvis is carried in a forward upward direction, the abdomen becomes drawn in, the chest, on the other hand, arched forward and expanded; the head is carried high on the stretched neck; the chin is kept in, the gaze directed forward, somewhat above the horizontal plane; the shoulders are well carried back, the arms can hang freely of their own weight, slightly bent in the elbow, wrist, and finger-joints, with the finger-tips placed close together, and kept close to the outer side of the legs." This description applies to the position of the soldier standing "to attention," as described in the "Infantry Drill," with the trifling difference that in the latter the fingers are bent. Similarly the sitting, lying, and hanging fundamental positions are "attention positions." Since some abnormal spinal curves are benefited by exercises in the hanging position, several important details are to be observed in adopting it; thus "The hands, separated from each other by the full breadth of the shoulders, take hold of the trapeze or other apparatus, placed at such a height that the feet do not touch the ground when the arms, trunk, and legs are fully extended. The head can be carried a little backward, whereby the upper part of the spine forms a slight arch forward, and a firm and graceful hanging position is attained. The bearing of the body is otherwise the same as in the standing fundamental position."

These "fundamental positions" are by no means positions of rest, as anyone who has had to stand "to attention" for long together will know; even lying at attention is not a resting position; as the author points out, for complete rest the patient must lie with the back supported on a plane inclined at an angle of 45°, the hips and knees bent at right angles, and the feet resting against a foot-board—in the Swedish terminology this is the "half-hook-lying" position.

From the fundamental positions, by altering the positions of arms, legs, or trunk, certain "derived positions" are obtained; thus if in the standing position the hands are rested on the iliac crests, with the fingers directed forwards and the thumbs backwards, the "hips-firm-standing" position is derived. A large section of the book is occupied by a description of the Swedish gymnastic movements. Many of these movements have their equivalents in massage. There are many of them: hacking, clapping, beating; kneading, sawing, pressing; shaking, vibration; stroking, friction; lifting, expansion, heaving, etc.

Hacking movements, the author states, "are the most agreeable, and therefore the most used, of all those included in medical gymnastics." They are very closely akin to the *tapotement* of massage. Both the positions and the movements are made clear by very numerous photographic illustrations, as in the examples Figs. 1, 2, 3.*

The application of the Swedish gymnastics to diseases of the circulatory, respiratory, digestive, and genito-urinary and nervous organs, and to deformities, is fully considered, and, after the introductory chapters have been mastered, will well repay careful study. The author of this book is

* For permission to use these Figures we are indebted to Messrs. Sampson Low, Marston & Co.

not a narrow enthusiast: he recognises the limitations of the therapeutic measures he is describing with great care and in complete detail. The

Fig. 1.—Side suspension, used for scoliosis. Fig. 2.—Half-lying double arm-flexion and extension.

Fig. 3.—Half-hook-lying: abdominal kneading.

reader will appreciate this reserve, and realise how important it is for Swedish and other systems to be under medical control, so that the interest of the patient is placed above every other consideration.

It may be mentioned that the translation of the book is well done, in that the author's meaning is always made clear, though the language has the quaintness that comes of the writer using a language foreign to him.

J. JACKSON CLARKE.

Massage and the Original Swedish Movements: their Application to Various Diseases of the Body. By KURRE W. OSTRÖM, from the Royal University of Upsala, Sweden. London: H. K. Lewis. 1899. Pp. 168. Size 12mo. 105 Illustrations. Fourth Edition. Price 3s. 6d.

THE author has lectured for some years before various nursing institutions in Philadelphia, and the fact that the first edition was only published ten years ago is *primâ facie* evidence that his work has been appreciated. At first the book was merely a manual of massage, but in the later editions the question of the Swedish movements as taught originally by Ling has also been discussed, and 60 illustrations derived from the authoritative text-book of Dr. Hortelius have been incorporated. It is in the presence of these illustrations that the chief value of this work resides; books on massage are usually dull and dry reading, and although it is impossible to represent action in a picture, yet the fixation of certain positions is useful. As regards the letterpress, the material is clearly and intelligibly presented, and, as the author claims, the book should prove useful to the *physician* who desires to study the principal points of mechano-therapeutics (including the Schott exercises), to the *nurse* who needs a text-book, and to the professional *masseur* who desires to keep abreast of the latest developments of the subject.

B. Bradshaw's Dictionary of Bathing Places, Climatic Health Resorts, Mineral Waters, Sea Baths, and Hydropathic Establishments. With a Map, and several smaller Maps and Plans. 4½ × 3 in. Pp. xxxix–372. London: Kegan Paul, Trench, Trübner & Co., Ltd., Charing Cross Road, W.C. 1899. Price 2s. 6d.

THIS is a handy little pocket directory, "giving the names of doctors, hotels which can be recommended with confidence, and other useful information." Air-cure stations, mineral springs, thermal springs, etc., are all described and classified. The volume is intended for the laity as well as for the profession, and contains in readily accessible form much useful and practical information. It is an admirable addition to the library of either the consultant or the traveller.

Literary Gossip.

LIKE a certain brook, famous in poetry, the Index-Catalogue of the Surgeon-General's Office at Washington goes on for ever. The fourth volume of the second series, which has recently been published, extends from D— to Emulsions. It includes 9,628 author-titles, representing 4,133 volumes and 8,523 pamphlets. It also contains 8,828 subject-titles of separate books and pamphlets, and 28,316 titles of articles in periodicals. The Library now contains 130,708 bound volumes and 220,839 pamphlets. The following table, showing the number of titles in the Index-Catalogue as far as published, will serve to give an idea of the vast range of medical literature covered by this truly monumental work :—

	AUTHOR-TITLES.			SUBJECT-TITLES.		Portraits.
	Titles.	Volumes.	Pamphlets.	Book-titles.	Journal articles.	
Total in first series	176,364	85,665	151,501	168,557	511,112	1,335
Second series: Vol. I.	6,346	6,127	6,327	7,884	30,384	—
Vol. II.	15,752	6,383	14,802	5,774	21,725	—
Vol. III.	11,112	4,873	10,690	10,636	34,311	677
Vol. IV.	9,628	4,133	8,523	8,828	28,316	—
Total to date	219,181	107,179	191,843	201,679	625,851	5,012

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Would you avoid what Byron calls—

> . . . that worst of human ills,
> The inflammation of the weekly bills?

You will find a useful antiphlogistic in a little book by Mrs. C. S. Peel, entitled *Ten Shillings a Head per Week for House Books* (Westminster: Archibald Constable & Co., 1899; price 3s. 6d.). Mrs. Peel says that, roughly speaking, for a family of six or nine persons, an average of £1 per head a week allows of luxurious living; 15s. per head of good living; 10s. for nice catering of a simple description; and 8s. 6d. per head for a sufficiency of wholesome food. Mrs. Peel's principles are excellent, and in the abstract will be accepted with enthusiasm by the average paterfamilias. But when it comes to practice, he may find them less admirable. Economy is a good thing in itself, but there is an economy of bodily efficiency which is of more importance than the saving of a shilling or two a week on the butcher's bills. Mrs. Peel says, "The average caterer is far too fond of legs of mutton and sirloins of beef, which, with the saddle of mutton, are the most expensive joints." And yet they are the most economical if their effect on the welfare of the household is taken into account; for a diet of New Zealand mutton, ribs of beef, and stewed ox-tails will tend to eclipse the gaiety of the best-regulated families. "There's nae luck aboot the house" when the gudeman is not fed in conformity with his carnal appetites, and the 10s. a week of Mrs. Peel's domestic budget is too likely to be more than balanced by an expense of health, temper, and working

power which cannot be stated in terms of money, but which none the less may lead to bankruptcy. It is unquestionable, however, that the management of the British household is often wasteful, and that the monotony of the family bill of fare shows a want of imagination in the ordinary British housewife. Mrs. Peel's book will be found useful as a help to the correction of both these defects. Her menus for the breakfast table in particular suggest a large choice of appetising variants from bacon and eggs, which play so great a part in building up the British constitution.

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Dr. G. H. F. Nuttall, sometime of Baltimore, now of Cambridge, contributes to a recent number of the Johns Hopkins Hospital Reports (Vol. viii., Nos. 1, 2) a paper entitled "On the *Rôle* of Insects, Arachnids, and Myriapods as Carriers in the spread of Bacterial and Parasitic Diseases of Man and Animals," which is a rich storehouse of references bearing on the subject with which it deals. From this point of view the most interesting section of the monograph is that relating to the mosquito malaria theory. It appears that as usual the people have in various countries long anticipated this latest birth of scientific research. That mosquitoes are agents in the transmission of malaria has long been a belief among the Italian peasants; the same idea prevails in Southern Tyrol. The negro of East Africa calls malaria *Mdu*, a word which also means mosquito, and he thinks he gets the disease from the sting of the insect. In some other parts of Africa, and in Assam, the natives believe that mosquito bites cause fever. Dr. Nuttall adds that the mosquito-malaria theory has certainly existed a long time in the United States. In 1848 Nott, of New Orleans, published an essay on yellow fever, in which he also refers to malaria as if the mosquito theory had already been advanced, and he gives grounds for his belief that the insect also causes yellow fever. In 1883 King brought together a mass of evidence on the subject. Dr. Nuttall appears to suggest that the discovery belongs to the United States, and he speaks of the theory having been "rediscovered" in Europe, adding that in France it is ascribed to Laveran, in Germany to Koch and Pfeiffer, in England to Manson, and in Italy to Bignami, Mendini, and "lastly" (!) Grassi. But whoever discovered or "rediscovered" the "theory," it is quite certain that Nott and King were voices crying in the wilderness, and that the man who, in the teeth of unbelief and ridicule, forced the theory on the attention of the scientific world was Patrick Manson.

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An answer to every conceivable question relative to medical study, qualifications, and degrees in Scotland may be got *cito, tuto et jucunde* by inquiring within the covers of the *Medical School Calendar for Scotland* (Edinburgh: E. & S. Livingstone; price 2s.): *cito*, for the book is conveniently arranged for purposes of reference; *tuto*, for the information supplied is accurate and up to date; *jucunde*—to the parent or guardian, for the teaching arrangements are satisfactory and the fees are moderate.

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One hears of a forthcoming new illustrated medical journal. We know nothing of its promoters, but they may be recommended to lay to heart Iago's advice to Roderigo: "Put money in thy purse!"

Novelties and New Inventions.

Messrs. Carter, of 6A, New Cavendish Street, W., have introduced a new form of bed-rest which promises to be more comfortable and luxurious than any that has been previously used. In the accompanying blocks the old type is represented (Fig. 1), showing its invariable construction as seen from the back. It consists of a solid wooden frame both top and bottom, and these, being quite rigid and unyielding, cause discomfort and irritation,

Fig. 1.

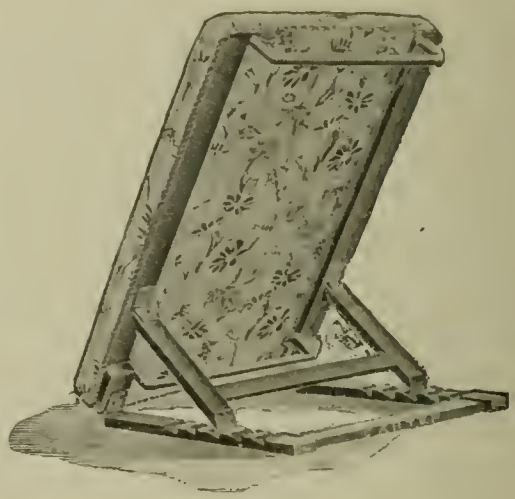

Fig. 2.

the lower one often projecting into the loins and causing great pain. In Fig. 2, the new **Raston Bed-rest** is shown. In it these hard wooden rails are dispensed with, and the side frames are kept apart by two light cranked iron bars, thus allowing the material with which the bed-rest is upholstered or covered to be stretched and suspended across from side to side, leaving the supporting surface absolutely free and yielding, so as to adapt and conform itself to the shape of the body. There can be no question that invalids will find this support a great boon. In Fig. 3 is depicted the Raston pillow support, which can also be converted into a bed-rest. The

Fig. 3.

actual rest consists of two wooden side frames, across which is stretched and suspended woven wire mesh, which forms a springy and comfortable basis for the pillow, which is attached and kept in position by means of four tabs of web stitched on to the tick of an ordinary pillow, and buttoned to studs fitted under the frame. This support can be adjusted at any angle as a bed-rest. It will doubtless prove a comfortable and useful contrivance.

Shredded Wheat Biscuits.—In the preparation of these biscuits the whole wheat grain is employed after very efficient cleansing and cooking; it is then shredded, and built up into biscuits, which are sent out in a convenient size, and may be utilised in a great many ways. Thus, it may be lightly toasted and eaten with butter; poached or scrambled eggs may be placed on it; and, indeed, from the little pamphlet which accompanies the sample, it appears that it may be used in the preparation of an infinite variety of breakfast or dinner nick-nacks, and may entirely replace bread. They are prepared by the Cereal Machine Co., Worcester, Mass. We have tried these biscuits, and whilst we open our eyes at the claim that "they have never failed to cure consumption in the most aggravated form," yet we admit that they are nutritious, easily digested, and not unpleasant for a change.

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Eau d'Orezza.—We have received samples of this acidulated ferruginous water, which is obtained from natural springs in Corsica. Each litre of it contains 128 milligrammes of iron and two litres of carbonic acid gas. The Académie de Médecine de Paris reported that no other natural water on the Continent contained so much of these ingredients. Dr. Dechambre (*Dict. Encyclop. des Sciences méd.*, t. xvii.) writes: "Orezza water is agreeable to drink, easily assimilated, and rapidly increases the appetite, even when long lost; it favours digestion, gives a sensation of comfort, and quickly restores the strength. It is markedly diuretic, and does not produce constipation." We have tasted the sample and can recommend it as a pleasant means of giving iron, gaining the maximum of benefit with the minimum of discomfort. The usual dose should be about a bottle a day at meals.

* * * * * *

Robin's Peptonate of Iron (English depôt, Jozeau, 49, Haymarket) constitutes one of the methods of administering this drug in a concentrated form, at the same time that it is easily assimilable and unirritating. The solution is perhaps slightly acid, but there is no uncombined iron, as it gives no reaction with liquor potassæ, and no discoloration or precipitate with ferrocyanide or ferricyanide of potassium. The metal is closely combined as a peptonate, and glycerine is added. The dose is ten or fifteen drops in water, and it has the additional advantage of not causing constipation or blackening the teeth. It is an elegant and valuable preparation.

* * * * * *

Robin's Granulated Glycerophosphate is another tolerably recent reappearance of an old remedy. The value of the phosphates has long been recognised, and various combinations with or without iron are well known. In this the phosphates of lime and soda predominate, and are associated with glycerine in a granulated form, which readily dissolves in water to form a neutral fluid of a sweetish and not unpleasant taste. It is valuable in rickets, and may be used with great advantage in conditions of neurasthenia or nerve exhaustion, on the plea that the glycerophosphate supplies the nervous system with pabulum for the due construction of lecithin, a phosphoric compound. It causes no digestive disturbance, and we can heartily commend it in suitable cases.

Practical Notes.

Cough in Phthisis.—The following formula has been recommended:

R	Terpin Hydrate	15 grains.
	Codein	1½ grains.
	Ext. of Hyoscyamus	1½ grains.
	Ext. of Belladonna	¾ grain.
	Mass of Cynoglossum	7½ grains.

Make into ten pills. One four times a day between meals.

Jour. des Prat.

Facial Neuralgia.—The following mixture often gives relief:

R	Butylchloral Hydrate	of each 2½ drachms
	Alcohol	
	Glycerine	5 drachms
	Water	30 drachms.

Sig.—One to two teaspoonfuls daily.

Progrès Médical.

Chapped Hands.—The following may be useful:

R	Menthol	1 part
	Salol	2 parts
	Olive Oil	10 parts
	Lanolin	30 parts.

Sig.—Apply night and morning.

Therapeutic Gazette.

The Use of Gelato-Glycerine Bougies in the Treatment of Earache.—Richards (*Laryngoscope*, August, 1899) states that further experience has convinced him more than ever of the value of gelato-glycerine bougies in an early stage of acute otitis media and in acute otitis externa. They can be inserted in the ear without difficulty by simply washing off the lycopodium powder with which they are covered; they are then very slippery, and, with the affected ear uppermost, easily slip down into the canal. Here the bougie soon dissolves, the anodyne is brought directly into contact with the inflamed surfaces, and the pain is relieved. Besides being a medium for the exhibition of other remedies, the glycerine is of itself distinctly curative, in that it tends to draw out some serum from within and lessen the tension. This favours absorption, and a paracentesis may be prevented. After insertion, the ear should be stoppered with absorbent cotton or gauze, and a lightly filled hot-water bottle placed at the side of, or over, the ear. Cases which have passed an early stage are, of course, beyond relief with this remedy, and demand treatment appropriate to

the condition, whether paracentesis or other. Many a case of acute earache in children will, if promptly treated in this manner, at once subside without going on to severe inflammation. The following formula is recommended :—

R	Carbolic Acid	7 minims.
	Fluid Extract of Opium	6 minims.
	Cocaine	3 grains.
	Atropine Sulphate	3 grains.
	Water	52 minims.
	Gelatine	18 grains.
	Glycerine	158 grains.

To make 42 bougies.

After making, they should be covered with lycopodium, and dispensed in a bottle, as they are hygroscopic. They should be no larger than will readily slip in the external canal. The size made in a urethral bougie-mould has proved satisfactory.

The Hypodermic Injection of Mercury rendered Painless by the Addition of Guaiacol.—Bazin (*Semaine Méd.*, March 22, 1899) states that guaiacol will render painless intramuscular injections of grey oil, oil with calomel, and especially oily solutions of biniodide of mercury, frequently employed for a long time in the treatment of syphilis. Bazin regards it as sufficient to incorporate with the preparation to be used 3 per cent. of the purified drug. Here is the formula which Legrange recommends in his supplementary course on ophthalmology in the Bordeaux Faculty of Medicine :—

℞	Sterilised Olive Oil	20 drams.
	Mercury Biniodide	6 grains
	Synthetic Guaiacol	36 grains.

Should the physician inject every day, or every second day, in the region of the thigh, say, 30 grains of this solution, it will represent about $\frac{1}{4}$ of a grain of mercury biniodide. It is a well-known fact that mercury salts, and particularly iodine-mercury preparations, cannot be combined with cocaine without precipitating the latter and rendering it useless as an anæsthetic. All such remedies for hypodermic use will probably work well with guaiacol.—*Merck's Archives*, June, 1899.

Footsoreness among Soldiers. — Major Macpherson, R.A.M.C., in the Army Medical Report for 1897, deals with this subject. All armies have suffered from this. There is always a certain number of men who suffer from tender feet. This is no doubt connected with the growth of micro-organisms, the warmth and moisture making the foot an almost perfect incubator, and the organic substances contained in the perspiration

provide a constant supply of nutrient material for the development of bacteria. The skin, socks, and boots become so highly charged with micro-organisms that the smallest abrasion becomes a sore. Many antiseptics have been employed. Salt water and vinegar were old remedies; washing the feet with mercurial and carbolic lotions, the free use of boric acid, have all been found useful. The "foot-powder" of the German army consists of salicylic and chromic acids, which hardens the epidermis and acts as a germicide. Tannoform, which has no smell, may also be tried (tannin and formaldehyde), or a solution of formic aldehyde (the now fashionable germicide). For offensive feet, wash the soles and between the toes with 2 per cent. solution of formalin; also wash the inside of boots and socks in same solution.

Benzoinol and Resorcin in Diseases of the Throat.—Blair (*Medical News*), having tested the various mixtures of resorcin and benzoinol in diseases of the nose and throat, has adopted the following formula as the most satisfactory:—

℞	Resorcin	gr. lxxx.
	Eucalyptol	gr. x.
	Menthol	gr. xx.
	Benzoinol	ʒ iv.

The mixture possesses the soothing properties of benzoinol, which, when applied to the mucous membrane of the nose, will not cause a flow of secretion, and it also has the anæsthetic, analgesic, and healing properties of resorcin, menthol, and eucalyptol. It has been used successfully in whooping-cough when sprayed into the nose, larynx, and lungs. In hay fever and asthma it affords marked relief. In acute laryngitis and aphonia it easily displaces the use of cocaine, to which it is far superior, in that it may be used freely without fear of the pernicious after-effects which follow the repeated use of cocaine. It is non-poisonous in the dose recommended. The claims made for benzoinol and resorcin compound are thus summed up: it is markedly anæsthetic and analgesic; it is antiseptic, astringent, non-poisonous, non-irritating, and healing. It is not suggestive of the drug shop as iodine, iodoform, and carbolic acid. It has a wider range of effective application than that of any other formula for an atomiser with which the author is familiar.

Mercurial Stomatitis.—The following has been recommended for use as a dentifrice:

Potassium Chlorate	300 grains.
Medicinal Soap	150 „
Calcium Carbonate	300 „
Oil of Peppermint	15 minims.
Oil of Cloves	4 „

Glycerine of sufficient quantity to make a paste.

Besides the use of this dentifrice, the mouth should be rinsed frequently with some antiseptic solution.

A Hemostatic-Anæsthetic Solution.—Legrand (*Journ. des Prat.*, quoted in *Therap. Gazette* for October, 1899) employs the following solution, particularly in lesions of the mouth where it is desired to produce anæsthesia and arrest small hæmorrhages :—

Pure Gelatine	30 grains.
Chloride of Sodium	8 „
Carbolic Acid	2 „
Hydrochlorate of Eucaine B	8 „
Hydrochlorate of Cocaine	2 „
Distilled Water	3½ ounces.

A New Treatment of Tapeworm.—Kime (*Medicine*, September, 1899) says that failure to secure the head of a tapeworm is often due to the fact that the parasite is carried into the lower bowel and has time to re-attach itself before its body is expelled. He therefore ties the protruding part of the worm about three inches from the anus of the patient, and then injects half a grain of morphine directly into the substance of the worm. After a short time a large injection of water is given, and the upper portion of the worm will pass out motionless and apparently dead. Most tapeworms have a pair of longitudinal vessels extending from one extremity to the other, so that a substance injected into any segment will reach every portion of the parasite. An elaborate preparatory treatment is quite unnecessary. His patients do not eat breakfast, and about nine o'clock receive a dose of infusion of pomegranate or, what is far better, of pelleterin tannate with one or two drops of croton oil. The patient should remain in bed under observation for two or three hours until movements of the bowels occur. If the worm passes, well and good. If only a part protrudes, the morphine should be injected into the worm.

A Medical Calendar.

DECEMBER.

1.—Scultetus, d. 1645.
A. Colles, d. 1843.
2.—
3.—Max von Pettenkofer, b. 1818.
4.—Luigi Galvani, d. 1798.
5.—Giovanni Battista Morgagni, d. 1771.
Marie Jean Pierre Flourens, d. 1867.
6.—Theodor Schwann, b. 1810.
7.—Robert Liston, d. 1847.
8.—
9.—
10.—Phillipe Ricord, b. 1800.
Joseph Skoda, b. 1805.
Southwood Smith, d. 1861.
11.—William Cullen, b. 1712.
Joseph Hyrtl, b. 1811.
Robert Koch, b. 1843.
Richard Bright, d. 1858.
Sir William Jenner, d. 1898.
12.—Erasmus Darwin, b. 1731.
Albrecht von Haller, d. 1777.
13.—
14.—
15.—
16.—James Hinton, b. 1822, d. 1875.
Sir William Petty, d. 1687.
17.—Sir Humphry Davy, b. 1778.
Successful removal of extra-uterine fœtus by Cyprianus, 1694.
18.—Jules Germain Cloquet, b. 1790.
Sir Richard Owen, d. 1892.
19.—
20.—Ambroise Paré, d. 1590.
Robert Knox, d. 1862.
21.—Sir John Burdon-Sanderson, b. 1828.
22.—Percival Pott, d. 1788.
23.—
24.—
25.—
26.—
27.—Louis Pasteur, b. 1822.
28.—Johannes Georg Zimmermann, b. 1728.
29.—Karl Ludwig, b. 1816.
Thomas Sydenham, d. 1689.
30.—
31.—Andreas Vesalius, b. 1514.
Hermann Boerhaave, b. 1668.
Johannes Christoph Spurzheim, b. 1776.
Sir William Gull, b. 1816.

Medical Officers of Unions entitled to be paid any extra fees, to make out their quarterly accounts to the 25th, and lay the same before the Guardians.

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